

Experiences, Challenges, and Practices in Accessing Digital Health Services Among Manipuri Indigenous Older Adults in Bangladesh: A Qualitative Study

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Abstract

Employing a qualitative design, this study investigates how indigenous Manipuri older adults in Bangladesh access and use digital health services to manage their health needs. In-depth interviews were conducted with 18 older members of the Manipuri community and four key informants, including retired teachers and a religious leader. Participants were selected through purposive sampling to ensure relevance and depth of insight. Data were analyzed using thematic analysis to identify key patterns related to digital health engagement. The findings indicate that most participants had limited awareness and understanding of digital health platforms and services. Older adults often relied on younger family members to schedule medical appointments and access online consultations, including telemedicine services provided from India. Educational background, age, religious beliefs, language proficiency, and technological skills influence their access to and engagement with digital health resources. Many participants preferred health programs broadcast on Indian Manipuri television channels as these aligned with their language and cultural identity. The study highlights the importance of incorporating indigenous perspectives, linguistic needs, and cultural contexts into digital health strategies to improve access to and adoption of e-health services among marginalized populations in Bangladesh.

Keywords

Access; Bangladesh; digital health; indigenous Manipuri people; use

Background

The rapid expansion of digital health technologies worldwide has created new opportunities within healthcare systems. These technologies are reshaping how health conditions are understood, monitored, and managed, enabling more effective interventions (Dwivedi et al., 2021; Tu et al., 2021). Advanced digital solutions, including e-health platforms, mobile health applications, medical informatics, telemedicine services, wearable health-tracking devices, wellness and self-care technologies, personalized medical approaches (Fatehi et al., 2020), and artificial intelligence, have strengthened healthcare delivery. These technologies have improved the accessibility, effectiveness, and overall quality of health services, contributing to more responsive and patient-centered systems across diverse settings (Al Dahdah & Mishra, 2023).

The integration of digital technologies into healthcare has increased in both developed and developing countries (Chidambaram et al., 2024). These tools enable patients, particularly disadvantaged and marginalized populations, to seek timely care and make informed health decisions (Awad et al., 2021). For example, telehealth has been identified as a viable strategy to overcome barriers to healthcare access among Indigenous Australians (Nasir et al., 2025). According to the World Health Organization (WHO) (2024), the number of people aged 60 years or older worldwide is projected to reach approximately 1.4 billion by 2030 and 2.1 billion by 2050. In response, the WHO introduced the Global Strategy on Digital Health (2020–2025) to strengthen health systems through digital health technologies and promote health for all (WHO, 2021).

Although the WHO, the Pan American Health Organization (PAHO), the UN Secretary-General, and the National Health Service in England have all prioritized digital inclusion (Xie et al., 2024), indigenous populations remain underrepresented. Recent studies reveal that 476 million indigenous people reside in 90 countries, representing 6% of the total population living with extreme poverty (United Nations [UN], 2025). Extreme poverty contributes to social and economic disadvantages that negatively affect health and well-being (Kabir et al., 2019). Bangladesh is home to approximately 1.5 million indigenous people, representing 1.8% of the country's total population (Rahman et al., 2021).

Nearly one in ten people in Bangladesh is 60 years of age or older, and this figure is expected to increase by 2050 (Afrin et al., 2025; Kabir et al., 2013), highlighting the emerging issue of population aging. Gender and age influence health decisions and care-seeking in tribal communities in Bangladesh (Rahman et al., 2012). Like other marginalized populations in hard-to-reach areas, Manipuri indigenous older adults may benefit from digital health technologies (Choukou et al., 2021). Greater use of digital health technologies is considered a partial solution to the complex challenges of delivering healthcare to aging populations with chronic diseases (Bertolazzi et al., 2024).

Despite the promise of digital innovations to transform healthcare delivery, their expansion may also widen existing inequities, with some population groups benefiting more than others (Badr et al., 2024). Digital exclusion remains a persistent barrier to equitable healthcare access (Xue et al., 2026). Individuals from socially and economically disadvantaged backgrounds often face greater obstacles in accessing and using digital health services (Yao et al., 2022). Older adults generally exhibit lower levels of digital literacy than younger populations (Heponiemi et al., 2022). They are frequently depicted as a uniform category of “non-users,”

characterized by assumptions of technophobia, resistance to change, dependency, and unwillingness to adapt to new digital practices (Neves & Amaro, 2012; Quan-Haase et al., 2018). Research also shows that older indigenous women in high-income countries do not see themselves reflected in digital health offerings, but express a desire for greater inclusion (Henson et al., 2023).

Governments and policymakers need to prioritize digital health in the context of an aging population, including indigenous older adults. In Bangladesh, barriers such as limited information and communication technology (ICT) infrastructure, financial constraints, aging-related issues, health literacy, resistance to change, usability issues, lack of policy, and interoperability challenges contribute to a negative perception of digital health services (DHS) (Uddin et al., 2024). While DHS remains limited for the general population in Bangladesh, marginalized communities—particularly indigenous older adults—have even less access to them. Indigenous populations face diverse health needs and multiple challenges in seeking healthcare, and may be reluctant to seek medical help (Umaefulam et al., 2022). The National Institute on Minority Health and Health Disparities framework provides a useful lens for understanding digital health disparities among Manipuri older adults in Bangladesh at the individual, interpersonal, community, and societal levels (Alvidrez et al., 2019).

Indigenous communities in Bangladesh have inadequate access to healthcare services due to limited knowledge of healthcare needs, geographical barriers, financial constraints, high medical costs, lack of nearby facilities, and communication challenges (Hossen et al., 2023). Existing research on indigenous older adults in Bangladesh largely focuses on maternal and child health (Rahman et al., 2021; Rahman et al., 2012). Cultural concepts and indigenous perspectives on DHS are rarely incorporated into studies in Bangladesh. Therefore, this study explores the intersection of digital health access among Manipuri indigenous older adult populations in Bangladesh.

Methods and materials

Study design, setting, and duration

This research adopted a qualitative design to explore digital healthcare access and use. Ramnagar Manipuri para (village), located in Srimangal upazila (an administrative zone like a sub-district) in the Moulvibazar District of Bangladesh, was chosen as the study site. Locally, each village is called a “para” and is organized around specific families. Ramnagar Manipuri para was selected because of the relatively high number of older adults among the 53 families living there. Data collection was conducted from July 2023 to June 2024. The study followed the Consolidated Criteria for Reporting Qualitative Research (COREQ) checklist to ensure transparency and completeness in reporting (Tong et al., 2007).

Study population, sampling strategy, and sample size

Participants included individuals who had either directly used DHS or accessed it indirectly with assistance from family members. To establish rapport and identify eligible respondents, informal conversations were first held with community members at a local tea stall, which facilitated entry into the Manipuri indigenous older adult community. Subsequently, 18 in-depth interviews (IDIs) with older adults were conducted in their homes, along with four key

informant interviews (KIIs) with retired schoolteachers and a community priest familiar with digital health practices.

Eligible participants were aged 55–75 years, cognitively and physically able to participate, and willing to share their experiences. Purposive sampling was employed to ensure participants possessed relevant characteristics and could provide rich, context-specific insights (Tajik et al., 2025). The final sample size was guided by data saturation, defined as the point at which no new themes emerged from the interviews (Ahmed, 2025). After completing 16 IDIs and three KIIs, two additional IDIs and one additional KII were conducted to confirm data saturation. In qualitative research, the aim is not merely to reach a numerical threshold but to ensure sufficient depth and credibility of the findings (Ahmed, 2025).

Three considerations informed the sampling process: (i) inclusion of participants with diverse backgrounds, including different occupations, retired individuals, individuals with health conditions, and representation of both genders; (ii) recruitment of additional participants to validate and refine emerging themes through iterative data collection and analysis; and (iii) maintenance of researcher reflexivity during data interpretation (Dahal et al., 2024).

Data collection techniques and procedures

The research team had academic backgrounds in anthropology and public health, as well as prior experience in qualitative research. Semi-structured interview guidelines were developed and piloted before data collection. Participants were informed about the study's objectives and rationale. Written and verbal informed consent was obtained before each interview. Each participant was assigned a pseudonym based on chronological order (e.g., IDI 1, IDI 2, KII 1). Interviews were audio-recorded using a mobile phone, and field notes were taken during the interviews. The IDIs lasted 30–40 minutes, and KIIs lasted around 45–60 minutes. Interviews were conducted in the local Sylheti dialect, which was familiar to both participants and researchers. No non-participants were present during the interviews. The research team remained attentive to potential bias during data collection and analysis. Peer debriefing was conducted regularly with a member of the dissertation committee throughout the study period.

Data analysis

All interviews were transcribed verbatim and translated into English. The research team repeatedly reviewed selected transcripts to ensure familiarity with the data. Data were managed and analyzed using ATLAS.ti version 23. Initial open codes were generated based on the study objectives and field notes (Bhuiya et al., 2025). The researchers independently coded the transcripts, and any newly identified codes were discussed and collectively agreed upon.

Related codes were grouped into sub-themes and subsequently refined into overarching themes, following the steps of thematic analysis by Braun and Clarke (2006). Daily briefing sessions were conducted during data collection to discuss emerging insights and triangulate interpretations. This process enhanced analytic rigor and strengthened the credibility of the findings (Nguyen & Spall, 2008). Prolonged engagement with participants and the study setting further supported the credibility and contextual depth of the analysis (Korstjens & Moser, 2018).

Ethical considerations

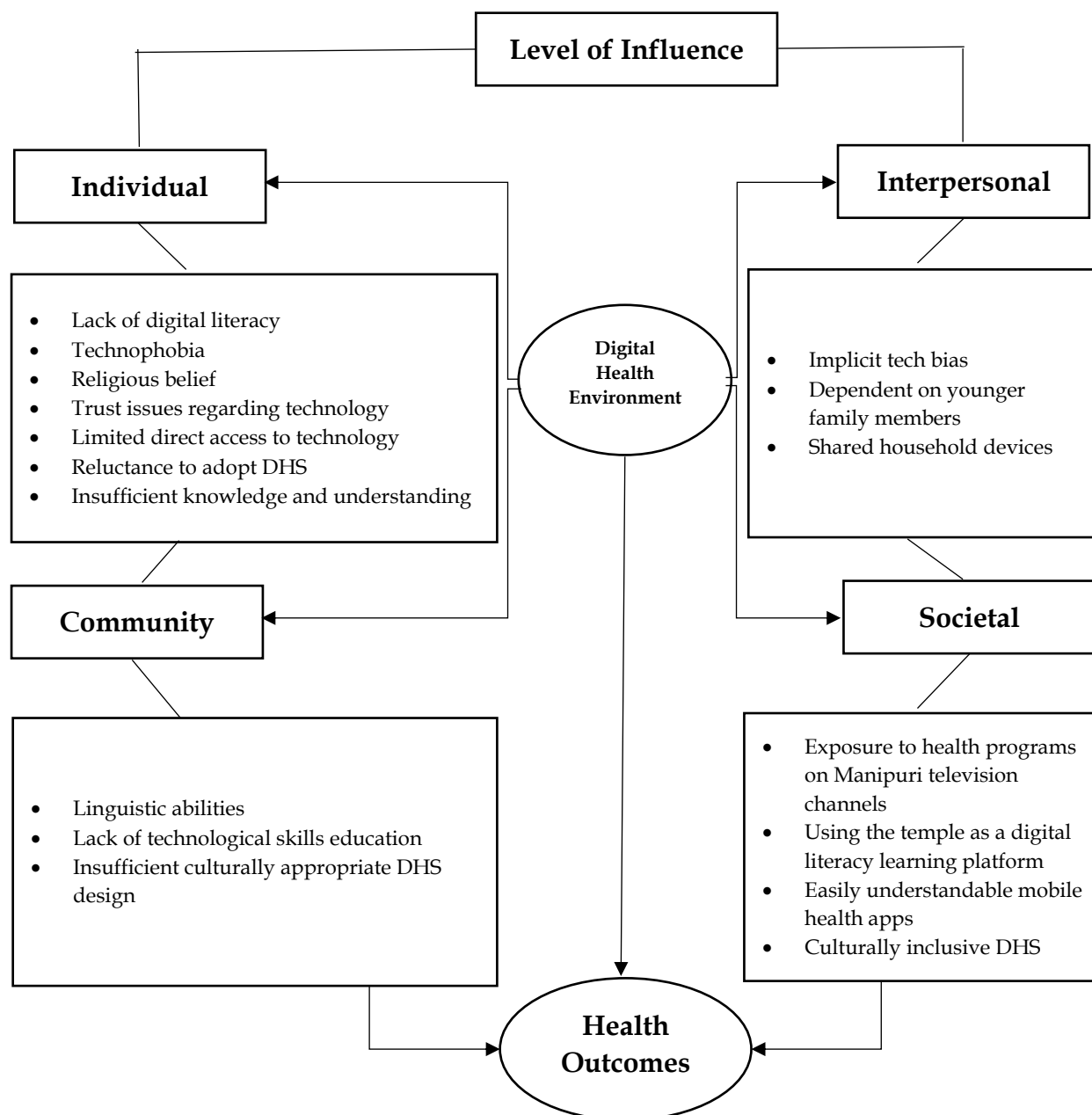
Before the interview began, this study received ethical approval from the post-doctoral higher study committee of the department of Anthropology, Shahjalal University of Science and Technology, Sylhet, Bangladesh (Approval No. ANP_AA_2023:7). Verbal consent was obtained from the community leader of the Manipuri indigenous group, with an explanation of the academic purpose of the research and the voluntary nature of participation. Participants were assured that their responses and personal information would remain confidential, and they had the flexibility to withdraw from the study at any time without providing any reason. Given that many participants were older adults whose family members tended to make health-related decisions on their behalf, their family members were also informed about the consent process. To ensure privacy, only the research team has access to the data, which is stored in a password-protected file. After the manuscript is published, all of the data will be deleted to address the concerns of the study participants.

Conceptual framework

The National Institute on Minority Health and Health Disparities (2023) Research Framework was employed in this study to examine the structural and social determinants influencing digital health access among marginalized and vulnerable populations. This framework, widely used in health disparities research, outlines four dimensions of influence: individual, organizational, community, and societal (Alvidrez et al., 2019). It provides a structured approach to understanding how multilevel factors shape digital health access and engagement.

In this study, factors such as religious beliefs, trust issues, limited digital literacy, aging, educational background, technophobia, and indirect use of technology influenced individual-level access to digital services among indigenous older adults. Dependence on younger family members, shared household devices, and implicit tech bias shaped older adults' use of DHS in the interpersonal domain. At the community level, limited linguistic abilities, limited technological skills, and a lack of culturally appropriate DHS design influenced access to and use of DHS. At the societal level, reliance on Manipuri television channels as a preferred cultural medium, along with the use of temples as platforms for digital literacy activities, further shaped engagement with DHS (See Figure 1).

Figure 1: Conceptual Framework of Digital Health Access and Usage by Manipuri Indigenous Older Adults



Results

The sociodemographic profiles of the participants are summarized in Table 1. Participants were aged 55–75 years, with a mean age of 65 years ($SD = 10$). Of the 22 participants, 10 were male, and 12 were female. A large proportion ($n = 8$) worked as handloom weavers, reflecting the traditional occupational pattern of the Manipuri community. All participants identified as Hindu and resided in plain-land areas, consistent with the settlement pattern of the Manipuri indigenous population in Bangladesh.

Table 1: Sociodemographic Characteristics of Participants

Characteristic	Method		
	Conversation (<i>n</i> = 22)	IDI (<i>n</i> = 18)	KII (<i>n</i> = 4)
Age in Years (mean $\pm$ SD)	55–75	65 $\pm$ 10	65 $\pm$ 10
Ethnic Identity			
Manipuri	22	18	4
Gender			
Male	10	7	3
Female	12	11	1
Religious Identity			
Hindu	22	18	4
Literacy			
Elementary Education	4	4	0
Secondary Education	3	1	2
Higher Education	2	0	2
No Education	13	13	-
Settlement			
Plain Land	22	18	4
Profession			
Retired School Teacher	3	-	3
Cloth Weaver	8	8	-
Housewife	4	4	-
Homebound Senior	5	5	-
Priest	1	1	1
Shopkeeper	1	-	-

Knowledge and understanding of digital health

Field data demonstrated that older adults in the Manipuri community had limited knowledge of digital health technologies, including mobile phone applications, telemedicine, and smart health systems. Most participants had only heard the term “digital health” in relation to mobile phones.

Table 2: Participants’ Knowledge, Perception, and Understanding of Digital Health

1. 1 Digital health is something they receive from the Upazila Health Complex
1. 2 X-ray and ECG are digital health
1. 3 Going to a renowned hospital in Sylhet city is digital health
1. 4 Seeing health-related videos on YouTube
1. 5 Receiving free treatment from the government is digital health
1. 6 No idea about digital health, difficult to understand

Most participants associated digital health with services received at the Upazila Health Complex, diagnostic procedures such as X-ray and ECG, visits to hospitals in Sylhet city, viewing health-related videos on YouTube, or receiving free government treatment (Table 2). Several participants described digital health as the use of computers in medical treatment. One participant stated:

“I was suffering from a bone fracture in my knee several days ago. The doctor then prescribed an X-ray. Surprisingly, I got my report within a few hours because of digitalization.”

(IDI 2, Male, Age 71)

Most participants were familiar with only YouTube as a digital platform. Few were aware of other health-related applications, and most lacked access to smartphones. Family members largely managed health-related decisions and digital access.

Access to digital healthcare

Dependency on other family members

All participants reported reliance on family members for health-related issues. Younger relatives typically made decisions about doctor selection or treatment timing. Family members scheduled appointments, searched for health information online, and arranged video consultations. One participant explained:

“For the last two years, my family members have been my caregivers. Whenever I am not capable of going to the doctor, my son assists me to consult with the doctor by video call.”

(IDI 17, Female, Age 59)

Dependency on family members limited participants’ direct involvement with digital technologies.

Community media and information access

Participants’ access to digital health information was shaped by their preference for Indian Manipuri television channels. A Manipuri-language channel broadcast from India served as a primary source of health-related information. Participants reported regularly watching health programs in their native language that reflect their cultural context. However, despite gaining useful knowledge from these broadcasts, participants expressed limitations in interacting directly with the healthcare professionals featured in the programs because the channel was based outside Bangladesh; viewers were unable to communicate with doctors via mobile phones or other digital platforms. One participant shared:

“Our whole family watches this TV channel most of the time. Different cultural and health-related programs are telecast on this channel in our native language.”

(IDI 12, Male, Age 56)

Participants reported that information broadcast in their native language was easy to understand.

Consultation with overseas health professionals

Some participants with chronic health conditions reported consulting Indian doctors through mobile phone communication arranged by family members. Younger relatives managed appointments and video consultations. One key informant stated:

“Last year, whenever my heart problem was getting serious, my son and daughter took all the initiative to contact an Indian doctor by mobile phone. Now, I consult with the doctor by video call every month on my son’s mobile phone.”

(KII 1, Male, Age 65)

Digital literacy

Limited digital skills

Participants reported limited familiarity with digital devices. The most commonly used basic mobile phones are primarily for making and receiving calls. Only a small number had experience using smartphones or other digital devices. One participant stated:

"I am not capable of using digital devices. If I knew how to use digital devices, I would use them to take advantage of health services. It would be beneficial to learn how to use digital devices."

(IDI 14, Male, Age 60)

Community-based learning

Field observations indicated that the temple in Ramnagar functions as a central gathering point for community members, particularly older adults. Participants suggested organizing digital health discussions at the temple to raise awareness. One participant stated:

"If you arrange a discussion session about digital health and services in the temple, then it will be very helpful for our community people because a large number of older adults come to pray here every day."

(KII 4, Male, Age 60)

Participants also expressed interest in having a Manipuri-language television channel broadcast from Bangladesh to access culturally relevant health information. One participant shared:

"I watch the Manipuri channel regularly. If this particular Manipuri channel could be brought to our country, then it would be very helpful for us to contact a doctor by phone."

(IDI 18, Female, Age 64)

Similarly, in the words of another participant during the IDI:

"If this Manipuri TV channel were to be telecast from Bangladesh, it would be very beneficial for those of us who watch this channel regularly."

(IDI 7, Female, Age 55)

Barriers to access and use

Lack of education

Participants identified limited educational attainment as a barrier to understanding and using DHS. Many older adults reported not having attended school and felt unable to engage with digital technologies. One participant stated:

"I am interested in learning about digital health technologies, but I have no minimum level of education. I have never been to school in my entire life."

(IDI 3, Male, Age 55)

Another participant shared:

"It is hard for me to understand digital health. It is for the young generation. I hardly hear it mentioned."

(IDI 1, Female, Age 57)

Age and language barriers

Participants described age-related challenges, including declining vision and limited familiarity with technology, as barriers to using digital health. One participant explained:

"Now I am 67, I cannot properly see all things around me. I need the help of my family members with everything. Unfortunately, it is not possible at this age."

(IDI 8, Male, Age 67)

Limited proficiency in written Bengali and English further restricted participants' ability to use digital platforms.

Religious beliefs

Religious beliefs influenced participants' perceptions of healthcare and digital technology. Some participants believed that health outcomes ultimately depend on divine will rather than technological intervention. One participant stated:

"If people follow the rules of religion, there is no need to use digital health or go to a doctor."

(IDI 11, Male, Age 70)

Trust in technology

Some participants expressed concerns about the reliability of DHS. Doubts were raised about the effectiveness of remote consultations compared to face-to-face consultations. One participant noted:

"I have no trust in digital health services. The situation will be worse if technology does not understand my problem clearly and gives me false treatment."

(IDI 4, Female, Age 64)

Discussion

This study examined access to and use of DHS among Manipuri indigenous older adults, considering demographic, geographic, and social determinants. The findings indicate that language, trust, educational background, age, and dependence on younger family members shape engagement with DHS. These factors reflect the structural and interpersonal dimensions of digital health access.

Digital health technologies are widely promoted to improve access to healthcare. However, the findings suggest that indigenous older adults face multiple barriers related to aging, peripheral location, and social marginalization (Awad et al., 2021). Limited awareness and educational attainment are among the practical and psychological barriers to DHS (Kabir et al., 2019; Rahman et al., 2012). Despite reporting limited direct access to digital technologies, many participants expressed interest in learning how to use them, indicating the importance of culturally responsive and inclusive digital health approaches.

Language is a central barrier. Older adults in Manipur are fluent in their native language and Sylheti, but many digital health platforms operate primarily in English. This linguistic mismatch limits comprehension and confidence in using DHS. Participants also reported that inconsistent Bengali terminology in health-related media created confusion. These findings are consistent with previous research indicating that English-dominated DHS may exclude indigenous populations (Tu et al., 2021). Improving linguistic accessibility may enhance usability for older indigenous users.

The study also highlights challenges in digital literacy. Many participants had limited experience with smartphones and online platforms, leading to low confidence and reluctance to use DHS. Misconceptions about digital health involving hospital-based services or diagnostic procedures reflect knowledge gaps. Within the NIMHD framework, these findings correspond to individual-level determinants, including technophobia and limited health literacy. Similar patterns have been observed among other vulnerable populations with restricted access to technology and low health literacy (Bertolazzi et al., 2024).

Dependence on younger family members plays a dual role. While limiting older adults' direct engagement with digital tools, it also allows indirect access to online consultations and health information, reflecting the interpersonal dimension of health access. The findings suggest that intergenerational support may function as an enabling factor in accessing DHS. At the same time, participants expressed interest in community-based learning initiatives, such as discussions held in the temple. Within the NIMHD framework, such settings may serve as community-based platforms for strengthening digital literacy.

The findings further indicate that limited use of local healthcare facilities is influenced by travel distance, transportation costs, and perceptions of service quality (Choukou et al., 2021). In this context, digital health solutions may help address access gaps for peripheral communities. However, the study also highlights the importance of aligning digital health strategies with indigenous cultural perspectives. Previous research emphasizes the need to integrate indigenous concepts of health and adopt a systems approach to address health disparities (Huang & Braun, 2025; Webkamigad et al., 2020).

Participants' preference for Manipuri-language television programs underscores the importance of culturally and linguistically relevant communication. The interest shown by participants in locally broadcast Manipuri-language health content suggests demand for accessible, context-specific health information. Evidence from other contexts, such as the development of digital health literacy scales for older adults in Korea, further demonstrates the need for tailored approaches for populations vulnerable to the digital information divide (Estacio et al., 2019; Kim et al., 2025).

Future research should explore caregivers' perspectives on digital health use among older adults and examine indigenous-led approaches to digital healthcare delivery to provide

additional insight into how culturally grounded strategies can improve digital health inclusion.

Conclusion

This study highlights the importance of ensuring that DHS are accessible and user-friendly for indigenous older adults experiencing social and economic disadvantage. The findings indicate that adoption of digital health technologies is influenced by educational background, age, prior exposure to digital tools, financial capacity, and the availability and functionality of digital devices.

Improving digital health inclusion requires attention to cultural context, lived experiences, and existing structural barriers. The NIMHD framework provides a useful structure for understanding multilevel determinants of digital health access and informing context-sensitive strategies aimed at reducing disparities among indigenous older adults.

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