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Understanding the Meaning of Digital Health Access Among People with Physical and Sensory Disabilities: A Phenomenological Study

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ABSTRACT

Mobile health (mHealth) applications have become a vital component of modern healthcare delivery, yet their design and implementation often fail to consider the lived experiences of individuals with disabilities. Within this context, the subjective challenges faced by users with physical or sensory impairments remain underexplored, particularly in relation to autonomy and digital inclusion. Although previous studies have addressed technical barriers, little is known about how these users emotionally experience and interpret exclusion from digital health platforms. This study asks: How do individuals with physical or sensory disabilities experience mobile health applications in their everyday lives? Using a descriptive phenomenological approach, this research explores the essence of digital exclusion as it is lived and felt by users themselves. Semi-structured interviews were conducted with nine participants (five with physical disabilities and four with sensory disabilities), aged between 24 and 61 years, representing diverse gender identities and technology usage backgrounds. The data were analyzed through thematic reduction to reveal core experiential themes. The findings demonstrate that users encounter not only functional barriers but also emotional burdens such as frustration, dependence, and a diminished sense of self-worth. Despite these challenges, participants expressed hope for more inclusive digital futures, revealing a complex interplay between exclusion and resilience. These results offer a deep, person-centered understanding of the phenomenon and highlight dimensions that previous usability-focused studies have overlooked. This study contributes to the field of medical informatics by emphasizing the importance of integrating lived experience into the design of mHealth technologies and encourages further research grounded in phenomenological methods.

INTRODUCTION

In recent years, the integration of mobile technology into healthcare delivery has reshaped how individual access, manage, and interact with health services (Stratton et al., 2022). Mobile health applications (mHealth apps) have emerged as essential tools, offering a wide range of functionalities—from remote consultations and appointment scheduling to medication reminders and health education. This digital transformation is part of a broader shift toward patient-centered care and technological empowerment in health systems across the globe.

However, despite the promise of inclusivity and accessibility, digital health ecosystems often overlook the needs of people with disabilities (Kohn et al., 2024). Structural, technical, and design-related barriers continue to marginalize this population, limiting their ability to engage with mobile health tools independently and meaningfully. This persistent exclusion highlights not only technological shortcomings but also raises deeper social and ethical concerns about equity in digital healthcare.

For individuals with physical or sensory impairments, navigating mobile health platforms can be a deeply personal and often frustrating experience (Nguyen et al., 2022). Their interactions with digital interfaces are shaped by more than usability—they are intertwined with issues of autonomy, dignity, and visibility within a healthcare system that increasingly privileges digital literacy and normative functionality.

This study seeks to answer the research question: How do individuals with physical or sensory disabilities experience mobile health applications in their everyday lives? Understanding these lived experiences is essential to informing the development of inclusive health technologies that respond to the diverse realities of users.

A phenomenological exploration of these lived experiences offers a valuable lens to uncover the deeper meanings, challenges, and emotional resonances associated with digital exclusion in healthcare (Sanchez Santos et al., 2020). Rather than focusing on system performance or quantitative accessibility metrics, this approach centers on the human side of digital interaction—how people feel, cope, and make sense of their encounters with mobile health applications. Such understanding is not only academically significant but also ethically urgent in guiding equitable health innovation and digital policy development.

Research on the lived experiences of individuals interacting with mobile health technologies—particularly among people with disabilities—has emerged as a significant area within medical informatics and digital health studies (Pak et al., 2023). Scholars increasingly recognize that understanding user experience requires more than measuring usability or functionality; it necessitates a deeper inquiry into how individuals perceive, interpret, and assign meaning to their digital encounters in the context of their bodily, social, and emotional realities.

Despite this growing awareness, many existing studies have relied heavily on quantitative or survey-based methodologies that inadequately capture the subjective dimensions of digital exclusion (Davies et al., 2021). Metrics such as satisfaction scores, frequency of use, or access rates often fail to reveal the nuanced emotional and cognitive struggles encountered by users with disabilities. As a result, critical insights into how such individuals navigate digital health platforms—what challenges they internalize, how they adapt, and what meanings they ascribe to these interactions—remain underexplored.

This methodological limitation underscores the inadequacy of prior approaches in fully capturing the essence of the phenomenon. Without direct engagement with the personal narratives and inner reflections of users, research risks presenting an incomplete and overly technical view of digital health access (Shikako et al., 2021). A phenomenological approach, which foregrounds lived experience and meaning-making, is therefore essential for advancing a more holistic understanding of how mobile health technologies affect the everyday lives of people with disabilities.

Existing efforts to address digital accessibility in mobile health platforms have primarily relied on technical improvements and usability testing frameworks (Scheer et al., 2023). These practical solutions—such as interface redesign, accessibility compliance checks, and user training modules—have contributed to some progress in mitigating functional barriers. However, they often operate within a utilitarian paradigm that overlooks the nuanced, lived realities of individuals with disabilities.

Such approaches tend to focus on performance-based outcomes, leaving little room to explore the emotional, psychological, and existential dimensions of digital exclusion. Quantitative assessments, although valuable for benchmarking, lack the depth required to uncover how disabled users internalize their experiences with mobile health technologies—what meanings they derive, how they navigate frustration, and in what ways their identities and autonomy are affected.

This limited lens results in a fragmented understanding of the phenomenon, where the richness of personal experience is reduced to numerical indicators or usability scores. To move beyond superficial interpretations, there is a critical need for research that engages directly with the voices of those most affected. A phenomenological approach offers such an avenue by enabling the exploration of the essence of digital health interactions from the perspective of those who live them daily.

By capturing the subjective meanings and emotional textures of these experiences, phenomenology provides a more holistic and human-centered understanding of digital health inclusion. Yet, few studies to date have employed this method in the context of disabled users' interactions with mobile health platforms, leaving a significant gap in both scholarly inquiry and practical innovation.

Several previous studies have investigated digital exclusion among individuals with disabilities, primarily focusing on technical accessibility and user interface design. While such studies offer valuable insights, they often lack a deep exploration of how these individuals experience digital health systems on a personal and emotional level. Some qualitative research has attempted to address this gap, yet most have employed generalized thematic approaches that do not fully capture the subjective essence of lived experience. Theoretical frameworks such as the social model of disability and user-centered design principles are frequently referenced, but they stop short of providing a first-person understanding of meaning-making. There remains a need for methodological approaches that allow users to articulate their own interpretations and challenges in navigating digital health platforms.

This study adopts a descriptive phenomenological approach to examine how individuals with physical or sensory disabilities experience mobile health applications. The phenomenological method was chosen because it centers on lived experience and enables the uncovering of meanings that are often missed by other methodologies. By employing this approach, the study directly addresses the gap in literature regarding the emotional and existential dimensions of digital exclusion. Through in-depth interviews, this research captures the voices of those most affected and brings their experiences into the conversation on inclusive health innovation. In doing so, the study contributes to a more human-centered understanding of health technology design.

The article begins with an introduction outlining the background and rationale for the study. It then describes the broader context of mobile health access for individuals with disabilities and details the phenomenological framework employed. The methodology section outlines participant selection, data collection, and thematic analysis procedures. Results are presented as a series of emergent themes supported by direct participant quotations. The article concludes with a discussion of findings, implications for practice, and directions for future research.

RESEARCH METHODS

Study Design

This study employed a descriptive phenomenological design to explore the lived experiences of individuals with disabilities in accessing mobile health applications. Phenomenology was selected as the methodological framework due to its emphasis on uncovering the essence of human experiences as perceived by individuals themselves. This approach allows for an in-depth examination of participants' subjective realities, making it particularly suitable for investigating the complex, nuanced experiences associated with digital health access.

Specifically, the study followed Husserlian phenomenology, which aims to describe phenomena as experienced, free from preconceptions, through a process of epoché. By bracketing prior assumptions, the design facilitates a pure focus on how participants perceive, interpret, and assign meaning to their interactions with mobile health technologies.

In line with qualitative research standards, researcher reflexivity was maintained throughout the study (Mills, 2019). The principal investigator kept a reflexive journal to acknowledge and reflect upon personal assumptions, prior experiences with disability advocacy, and potential influences on data interpretation. This reflexive stance helped to reduce interpretive bias and supported methodological transparency.

Participants

Participants were selected using purposive sampling to ensure relevance to the phenomenon under investigation. The inclusion criteria required individuals to be adults (aged 18 years or older) with physical or sensory disabilities and prior experience in using or attempting to use mobile health applications. Individuals with cognitive impairments or those unable to participate in in-depth interviews were excluded.

A total of nine participants (5 male, 4 female) ranging in age from 22 to 58 years (mean age = 39) were involved in the study. The sample represented a diverse range of disabilities, including visual impairment, hearing loss, and mobility limitations, and reflected a variety of digital literacy backgrounds, enhancing the contextual richness of the data.

The sample size was guided by the principle of data saturation, which was reached when no new themes or significant variations emerged in the final interviews (Guest, Bunce, & Johnson, 2006). In phenomenological research, smaller sample sizes (typically 6–10 participants) are widely accepted as sufficient to uncover the essence of lived experience (Creswell & Poth, 2018).

Data Collection

Data were collected through semi-structured in-depth interviews conducted face-to-face at locations chosen by the participants to ensure comfort and privacy. An interview guide was used to facilitate conversation while allowing for emergent themes to be explored organically. Interviews lasted between 45 and 75 minutes and were audio-recorded with participant consent.

All interviews were conducted in a quiet and accessible environment, and accommodations were provided, when necessary, such as sign language interpretation or assistive technology. Field notes were also taken to document contextual observations and participant nonverbal cues.

Data Analysis

Data were analyzed using thematic analysis guided by descriptive phenomenology. The process involved multiple stages: transcription of the audio recordings, repeated reading for immersion, identification of meaning units, and grouping of these units into thematic clusters. Reductive techniques were applied to distill the essential structures of the participants' experiences.

NVivo software was used to assist in data organization and coding, enabling a transparent and systematic analytical process. The final themes were derived by comparing patterns across transcripts, ensuring that the analysis remained faithful to the participants' narratives while revealing the essence of the phenomenon.

Ethical Considerations

Ethical approval was obtained from the appropriate institutional review board prior to data collection. Written informed consent was obtained from all participants. Confidentiality and anonymity were ensured through the use of pseudonyms and secure data storage. The study adhered to the ethical standards set forth in the Declaration of Helsinki and applicable national guidelines for research involving human subjects.

RESULTS

This section presents the findings derived from in-depth phenomenological analysis of participants lived experiences in accessing mobile health applications as individuals with disabilities. The data were collected through semi-structured interviews and analyzed using thematic reduction techniques. The emergent themes reflect not only the functional aspects of digital health access but also the psychological and social dimensions underlying their interactions with technology.

Navigating Digital Interfaces with Limitation

Participants expressed considerable frustration in attempting to interact with health applications that lacked accessibility features. The absence of screen reader compatibility, voice commands, and adaptable visual settings hindered their ability to complete even basic tasks, such as scheduling consultations or reading health information.

"I tried to book an appointment using the app, but the buttons weren't labeled for my screen reader. I had to ask my sister to help every time. It feels like these apps weren't made for people like me." (P4)

The recurrent narrative was not only about technological inadequacy but also the emotional toll of dependence and exclusion. Many felt invisible in the design logic of digital health platforms.

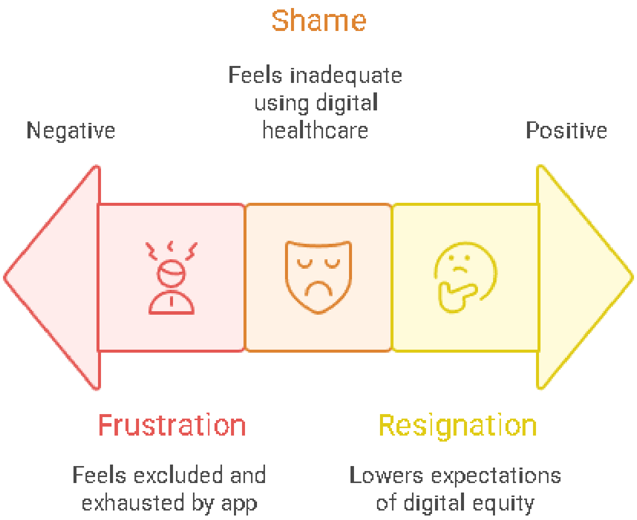
Emotional Burden and Digital Exclusion

The psychological weight of being excluded from independent health-seeking behavior was a prominent experience. Participants described feelings of frustration, shame, and diminished autonomy as they navigated systems not tailored to their needs.

"Every time I open that app, it reminds me that I'm not the kind of user they thought of. It's exhausting. Sometimes I just avoid using it altogether." (P2)

This emotional burden was compounded by a sense of resignation, where participants lowered their expectations of digital equity in healthcare systems.

Emotional impact of digital exclusion in healthcare systems.



Negotiated Dependence and Workarounds

Despite the barriers, participants often developed personal strategies and informal support systems to access digital health services. These included relying on family members, modifying devices, or using alternative applications.

"I know I can't use the app directly, so I just use WhatsApp to contact the clinic. It's not ideal, but it works for now." (P7)

This theme revealed a creative, though often suboptimal, negotiation with the system. While these workarounds enabled short-term access, they highlighted the persistent lack of structural accommodation.

Hope for Inclusive Digital Design

Interestingly, most participants maintained a sense of cautious optimism. They expressed hopes that future mobile health applications would integrate inclusive design principles, citing positive experiences with a few emerging platforms that offered basic accessibility features.

"I once used a mental health app that spoke the content out loud and even let me change the font size easily. It made me feel seen." (P5)

Such narratives indicate an awareness of technological potential and a desire to be included in the digital transformation of healthcare.

The findings underscore a complex interplay between technological design and human experience. For individuals with disabilities, accessing mobile health services is not merely a technical challenge—it is a lived negotiation of autonomy, dignity, and visibility. The essence of their experience lies in the tension between systemic exclusion and the resilience to adapt through personal and social means.

DISCUSSION

The findings of this study reveal that individuals with physical or sensory disabilities experience mobile health applications not merely as technological tools, but as emotionally charged interfaces that often reinforce exclusion, dependence, and frustration (Slater et al., 2020). These experiences reflect the deeper meaning of digital inaccessibility as a disruption of personal autonomy and social dignity, directly responding to the central research question regarding how disabled users interpret and navigate mobile health platforms.

This study contributes a unique phenomenological perspective by illuminating the essence of digital exclusion as lived and felt by users themselves. Rather than treating accessibility as a design flaw to be corrected, the research exposes how mobile health technologies—when poorly designed—can become symbols of neglect and marginalization (Fernández-Díaz et al., 2020). By moving beyond a checklist approach to accessibility, the study reframes digital health access as a relational and affective experience that is embedded within broader socio-technical systems. The themes of emotional burden, negotiated dependence, and cautious hope provide a textured understanding of the phenomenon that goes beyond surface-level usability critiques.

This work engages critically with the concept of digital accessibility not only as a functional necessity but as a human-centered imperative grounded in justice and dignity. The synthesis of these themes points to a broader conceptualization of "inclusive design"—one that integrates emotional and existential dimensions into the development of health technologies. In doing so, the study not only answers the primary research question but also broadens the conceptualization of digital health equity to include elements often overlooked in standard design discourse.

These insights align with and extend previous work in digital health and disability studies. For instance, studies by Masi et al. (2021) and Kim & Zhu (2020) acknowledge the persistence of structural barriers in digital systems, yet often stop short of capturing users' subjective meanings and emotional responses. This research complements such findings by offering empirical depth to the human impact of technological exclusion. Moreover, it resonates with socio-technical theories that advocate for the integration of user experience into systems design, suggesting that technology should be viewed as co-constructed through the interactions between users, interfaces, and institutional contexts.

The study also critiques the adequacy of universal design principles by highlighting their limitations in anticipating diverse lived realities. This supports Lai et al. (2023) argument that accessibility must be an evolving, participatory process rather than a fixed standard. Accordingly, accessibility should not be conceptualized solely through compliance checklists but rather through ongoing engagement with users who embody a variety of needs, identities, and capabilities.

The findings of this study carry significant implications for both healthcare practice and digital health design (Kayser et al., 2023). On a social and cultural level, the experiences of digital exclusion among individuals with disabilities highlight the persistent marginalization of this population in the rapidly evolving landscape of health innovation. These findings suggest that mobile health technologies must be designed not only for functionality but also for dignity, autonomy, and inclusion. Professionals involved in digital health development—including engineers, clinicians, and policy-makers—should consider incorporating lived experiences into design processes to ensure that platforms genuinely serve the needs of all users. In this context, inclusive design emerges not simply as a best practice, but as a shared ethical responsibility.

Several limitations of this study should be acknowledged. First, the sample size, while adequate for phenomenological inquiry, may limit the transferability of findings to broader populations. The study also focused specifically on users with physical and sensory disabilities, which may not capture the experiences of individuals with cognitive or psychological impairments. In addition, the reliance on self-reported narratives, while central to the phenomenological approach, may be influenced by memory, emotional state, or context at the time of the interview. These limitations do not diminish the value of the findings but rather contextualize their scope and provide a foundation for further inquiry.

Future research may benefit from expanding the scope of inquiry to include a wider range of disability experiences, including cognitive and neurodevelopmental conditions. Longitudinal studies could explore how perceptions and adaptations evolve over time as technologies develop and users become more digitally literate. In addition, theoretical integration with frameworks such as Human-Centered Design, Capability Theory, or Intersectional Disability Justice could further enrich future studies. Furthermore, interdisciplinary collaborations between healthcare professionals, disability advocates, and human-computer interaction researchers could lead to the co-creation of platforms that prioritize lived experience as a design principle. By deepening our understanding of how digital health tools are experienced in everyday life, future studies can contribute to a more inclusive, empathetic, and effective healthcare system.

CONCLUSION

This study explored the lived experiences of individuals with physical and sensory disabilities in using mobile health applications, addressing the broader issue of digital exclusion in healthcare access. The findings revealed that users often face emotional and functional barriers, including feelings of frustration, dependence, and invisibility, which go beyond technical usability challenges. Through a descriptive phenomenological approach, this research uncovered essential themes such as emotional burden, negotiated dependence, and the hope for inclusive design. These insights provide a deeper understanding of digital health inequities and highlight the need for more human-centered technological solutions. In direct response to the research question—how individuals with physical or sensory disabilities experience mobile health applications—this study demonstrates that digital exclusion is not merely a matter of interface design, but a lived reality with emotional and social consequences.

To enhance the practical relevance of these findings, this study recommends the incorporation of user-led participatory design processes in mHealth development, regular accessibility audits involving people with disabilities, and policy frameworks that mandate inclusive digital standards within national e-health strategies. By capturing the subjective meanings of these experiences, the study contributes to filling a critical gap left by prior research that focused mainly on quantitative or surface-level evaluations. In doing so, it offers a compelling case for rethinking digital health access through the lens of dignity, autonomy, and inclusion. Future studies should expand on this work by exploring diverse disability contexts and co-designing digital health tools that prioritize user experience from the outset.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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