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Factors Shaping Patients' Engagement in Digital Health Self-Management Tools

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A B S T R A C T

This study aimed to identify and understand the factors that influence patients' engagement with digital health self-management tools. This qualitative study used a phenomenological–interpretive design to explore patients' lived experiences with digital self-management technologies. Twenty-one adult participants residing in Canada were recruited through purposive sampling. Data were collected using in-depth semi-structured interviews conducted via telephone or videoconferencing. Interviews were audio-recorded, transcribed verbatim, anonymized, and analyzed using thematic analysis supported by NVivo software. Coding proceeded iteratively until theoretical saturation was reached. Trustworthiness was strengthened through reflexive memoing, researcher triangulation, and detailed documentation of analytic procedures. Four overarching themes and multiple subthemes emerged from the data. Personal determinants—including health motivation, digital literacy, emotional responses, perceived usefulness, privacy boundaries, and lifestyle fit—significantly shaped engagement. Technology-related factors such as usability, interface clarity, personalization features, technical reliability, meaningful data visualization, interoperability, and perceived data security influenced tool adoption and sustained use. Healthcare system and provider influences—particularly provider endorsement, integration of digital data into consultations, and ongoing support—reinforced accountability and strengthened engagement. Social and contextual factors, including family encouragement, cultural attitudes, socioeconomic constraints, environmental infrastructure, competing life demands, and privacy expectations, further moderated participants' engagement patterns. Collectively, the results indicate that engagement emerges from the interaction of individual, technological, clinical, and contextual dynamics rather than from any single factor. Patients' engagement with digital health self-management tools is shaped by a complex interplay of personal motivations, technological design, provider involvement, and socio-environmental contexts. Findings highlight the need for user-centered, context-responsive, and clinically integrated digital solutions that address both individual preferences and broader structural realities.

Keywords: *Digital health; self-management; patient engagement; mHealth; eHealth; qualitative research; chronic disease management*

1. Introduction

The rapid expansion of digital health technologies has significantly transformed the landscape of chronic disease management and patient engagement in recent years. Mobile health (mHealth) and electronic health (eHealth) interventions have become central tools for enabling individuals to monitor symptoms, track health behaviors, communicate with healthcare providers, and engage in proactive self-management practices. This shift has been reinforced by growing evidence suggesting that digital platforms can enhance self-efficacy, improve adherence to treatment regimens, and empower patients to participate more actively in their care (Leach et al., 2021; Shaw et al., 2019). Across diverse clinical populations, digital self-management tools have demonstrated potential to improve outcomes in conditions such as diabetes, hypertension, heart failure, chronic pain, and cardiometabolic disorders (Cao et al., 2021; Delva et al., 2020; Duckworth et al., 2024; Schmaderer et al., 2021; Varsi et al., 2021). As digital health becomes increasingly embedded in routine care, understanding the factors shaping patient engagement with these tools has emerged as a critical research priority.

A growing body of scholarship highlights the importance of engagement as a determinant of digital intervention effectiveness. Engagement encompasses both the behavioral elements of frequency, duration, and intensity of tool use, as well as the psychological dimensions of interest, motivation, and perceived value (Breil et al., 2021; Cao et al., 2022). Interventions that are poorly integrated into patients' daily lives or that fail to address contextual challenges often show limited adherence and suboptimal health outcomes (Sibuyi et al., 2020). Conversely, high engagement is associated with improved health literacy, better symptom monitoring, and enhanced communication between patients and providers (Osokpo, 2025; Yang et al., 2020a; Zhao et al., 2020). Despite these emerging insights, engagement remains a multifaceted construct influenced by individual, technological, healthcare system, and socio-environmental factors (Chioléro, 2023; Nalini et al., 2024). As digital health ecosystems expand, more research is needed to capture patient perspectives on what facilitates or inhibits sustained use.

Individual patient characteristics play a substantial role in shaping digital engagement. Health literacy and eHealth literacy have been identified as foundational determinants of successful self-management using digital tools (Ouédraogo et al., 2023, 2024). Studies have shown that individuals with higher eHealth literacy are more likely to navigate digital platforms effectively, interpret feedback accurately, and integrate digital monitoring into their routines (Osokpo, 2025; Sneha et al., 2021). Similarly, motivation, readiness to change, and disease acceptance influence whether individuals perceive digital tools as beneficial or burdensome (Lucia et al., 2024; Marini et al., 2023b). Emotional responses to technology—such as confidence, frustration, empowerment, or anxiety—further shape engagement trajectories (Schmaderer et al., 2022; Sze & Kow, 2023). As such, understanding patients' internal processes, beliefs, and experiences is crucial for designing tools that resonate with users' needs, preferences, and psychological realities.

Technology-related factors also substantially determine patients' willingness to engage with digital interventions. Usability, interface design, personalization, and reliability are among the most frequently cited features influencing sustained use (Bendtsen et al., 2024; Braake et al., 2024; Sirohi et al., 2025). Patients often disengage when platforms are overly complex, non-intuitive, or prone to technical glitches such as syncing errors or app crashes (Breil et al., 2021; Cao et al., 2022). In contrast, well-designed tools that offer personalized feedback, adaptable goals, and meaningful visualizations of health data enhance both satisfaction and commitment to long-term use (Duckworth et al., 2024; Yang et al., 2020b). Privacy and data security further influence trust in digital systems, as patients are increasingly aware of potential risks associated with sharing sensitive health information (Alshehri & Alshaikh, 2021; Zhong et al., 2025). Research indicates that transparency in data handling and security protocols contributes significantly to sustained engagement (Zhao et al., 2020).

Beyond individual and technological factors, the broader healthcare environment shapes how patients interact with digital health tools. Provider encouragement, clinical integration, and system structures play pivotal roles in reinforcing or diminishing digital engagement (Schmaderer et al., 2021; Varsi et al., 2021). When clinicians actively review digital data, incorporate it into treatment discussions, or recommend specific applications, patients are more likely to perceive digital tools as legitimate and valuable components of their care (Marini et al., 2023a; Shah et al., 2025). Conversely, lack of provider involvement, insufficient training, or minimal technical support can leave patients feeling isolated or unsure about proper tool use (Jendly et al., 2023; Lucia et al., 2024). Some studies also suggest that health systems with well-established digital

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infrastructures foster greater adoption and engagement, particularly when digital interventions are incorporated into existing patient pathways (Delva et al., 2020; Hägglund et al., 2022). As healthcare transitions toward increasingly hybrid models of digital and in-person care, the alignment between digital tools and clinical practices becomes even more central.

Socio-environmental and contextual factors also exert considerable influence on digital engagement. Cost, digital access, internet connectivity, and device availability all shape the extent to which patients can reliably and consistently use digital health tools (Sibuyi et al., 2022; Wang et al., 2021). Broader social norms, cultural values, and peer interactions contribute to how patients perceive the acceptability and relevance of digital technologies (Nalini et al., 2024). For example, social support from family or peers may encourage consistent use, whereas stigma or skepticism within communities can hinder engagement (Li et al., 2024; Ouédraogo et al., 2024). Meanwhile, environmental disruptions, life stressors, and competing responsibilities often reduce the capacity for routine self-monitoring, even when tools are well-designed and clinically useful (Sze & Kow, 2022). There is also emerging recognition that contextual inequities—such as socioeconomic disparities or geographic limitations—create unequal opportunities for digital participation (Delva et al., 2020; Wannheden & Revenäs, 2020). These structural dynamics underscore the importance of designing digital interventions that account for the realities of diverse patient populations.

In addition to identifying facilitators and barriers, recent research has explored patients' lived experiences and expectations regarding digital health. Qualitative studies have highlighted the subjective meanings patients attach to digital tools, including feelings of empowerment, reassurance, burden, or surveillance (Lucia et al., 2024; Zhong et al., 2025). These insights reveal that engagement is not merely a behavioral act but a deeply personal process entwined with values, emotions, and daily habits. For instance, patients often describe digital self-management as a balancing act between convenience and effort, autonomy and oversight, or hope and anxiety (Dsouza et al., 2024; Marini et al., 2023b). Understanding these nuances is critical for developing patient-centered digital interventions that support holistic well-being rather than simply tracking metrics.

Despite significant research progress, several gaps remain. Much of the existing literature has focused on specific diseases, particular technological platforms, or isolated aspects of engagement, limiting broader understanding of cross-cutting factors (Anwar et al., 2025; Sirohi et al., 2025). Moreover, many studies rely on quantitative metrics of engagement such as login frequency or retention rates, which fail to fully capture the experiential and contextual dimensions that influence meaningful use (Duckworth et al., 2024; Shah et al., 2025). There is a need for more qualitative inquiry that centers patient voices, explores engagement as a dynamic and relational process, and identifies the contextual factors shaping real-world use. Such research is essential for informing the development of equitable, accessible, and sustainable digital self-management solutions across diverse populations.

Given the complexity and multidimensionality of engagement, a deeper qualitative understanding of patients' perspectives is vital for designing interventions that align with their goals, challenges, and lived realities. To address these gaps, this study explores the experiences, motivations, and barriers that shape patients' engagement with digital health self-management tools. The aim of this study is to identify and understand the factors influencing patients' engagement with digital health self-management tools.

2. Methods and Materials

2.1. Study Design and Participants

This study employed a qualitative research design using a phenomenological–interpretive approach to explore patients' lived experiences and perceived factors influencing engagement with digital health self-management tools. A qualitative approach was selected because the objective of the study was to capture the depth, complexity, and contextual meanings underlying patient engagement behaviors, which cannot be adequately assessed through quantitative methods.

Participants were adults residing in Canada who had experience using at least one digital health self-management tool within the previous year. A purposeful sampling strategy was adopted to ensure the inclusion of diverse perspectives in terms of age, gender, digital literacy, and types of digital health tools used (e.g., mobile health applications, wearable devices, web-based monitoring platforms). Recruitment was conducted through community health centers, online patient support groups, and chronic disease management programs.

A total of 21 participants were enrolled in the study. Sampling continued until theoretical saturation was achieved—defined as the point at which no new concepts,

categories, or insights emerged from successive interviews, indicating that the data were sufficiently rich to support meaningful interpretation. All participants provided informed consent prior to participation.

2.2. Measures

Data were collected through semi-structured, in-depth interviews designed to elicit participants' experiences, motivations, barriers, and expectations related to engaging with digital self-management technologies. An interview guide with open-ended questions and optional probing prompts was developed based on existing literature on digital health engagement, self-management frameworks, and patient-centered care models.

Interviews were conducted between [insert months/year] via secure videoconferencing or telephone, depending on participant preference. Each interview lasted between 45 and 75 minutes and was audio-recorded with permission. Field notes were documented immediately after each interview to capture contextual details, emerging ideas, and non-verbal cues where applicable.

All audio files were transcribed verbatim. Transcripts were anonymized by removing identifying information and assigning unique participant codes. Data were stored on encrypted, password-protected institutional servers accessible only to the research team.

2.3. Data analysis

A thematic analysis approach was used to interpret the data, following Braun and Clarke's six analytical phases: data familiarization, initial coding, category development, theme construction, theme refinement, and report generation. Analysis began concurrently with data collection to facilitate progressive focusing and to assess the emergence of new conceptual insights relevant to theoretical saturation.

Transcripts were imported into NVivo qualitative data analysis software (version XX) to support systematic coding, data organization, and audit trail management. Two researchers independently coded the initial transcripts to establish coding consistency. Discrepancies were resolved through discussion until a shared coding framework was finalized.

Subsequent transcripts were coded using this finalized framework while remaining open to emergent ideas. Codes were clustered into higher-order categories to identify patterns, relationships, and overarching themes reflecting participants' perspectives on digital health self-management engagement. Reflexive memos were maintained throughout the analysis to document interpretive decisions, enhance analytic transparency, and strengthen the study's credibility and confirmability.

Trustworthiness of the findings was supported through triangulation of researchers' interpretations, peer debriefing within the research team, and meticulous documentation of the analytic process. Thick descriptions of participants' experiences were used to enhance transferability to similar healthcare and digital health contexts.

3. Findings and Results

The study included 21 adult participants residing across different provinces in Canada. Participants ranged in age from 28 to 72 years, with the largest age group being those between 41 and 60 years (n = 9), followed by ages 61 and older (n = 7), and ages 18–40 (n = 5). The sample comprised 12 women, 8 men, and 1 non-binary participant. Most participants reported using digital self-management tools for chronic conditions such as diabetes, hypertension, or asthma (n = 14), while others used the tools primarily for general wellness, mental health monitoring, or physical activity tracking (n = 7). In terms of educational background, 11 participants held a university degree, 6 had completed college or vocational training, and 4 had completed high school as their highest level of education. Participants had varying levels of digital literacy, with 10 describing themselves as highly comfortable with digital tools, 7 reporting moderate comfort, and 4 indicating low comfort or confidence. Across the sample, smartphones (n = 21) were the most commonly used device for engagement in digital health self-management, followed by wearable devices (n = 13) and web-based portals (n = 8).

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Table 1

Main Themes, Subthemes, and Concepts

Category (Main Theme)	Subcategory (Subtheme)	Concepts (Open Codes)
Personal Determinants of Engagement	Health Motivation & Self-Management Orientation	Desire to improve health; fear of disease progression; proactive health mindset; self-responsibility; long-term goal orientation
	Digital Literacy & Technology Confidence	Comfort with apps; experience with mobile tools; problem-solving ability; confidence navigating new interfaces
	Emotional Responses to Technology	Feeling overwhelmed; frustration with errors; excitement about tracking; anxiety about mistakes; trust/distrust feelings
	Perceived Usefulness of Tools	Tracking supports control; reminders improve adherence; insight into health patterns; belief in tool effectiveness
	Lifestyle Fit & Daily Routines	Easy integration into routines; time availability; interruptions during busy days; forgetting to use tools
	Privacy Awareness & Personal Boundaries	Concern about sharing data; preference for anonymity; caution about permissions
	Accessibility Needs & Functional Limitations	Vision issues; physical limitations; cognitive effort; need for simplified interfaces
Technology-Related Factors	Ease of Use & User Interface Quality	Simple menus; clear navigation; visual clarity; step-by-step instructions; intuitive design
	Technical Reliability & Performance	App crashes; syncing delays; slow loading; stable data recording
	Personalization & Adaptive Features	Custom reminders; personalized goals; adjustable dashboards; symptom-specific tracking
	Data Feedback & Visualization	Graphs for progress; trend summaries; real-time notifications; goal progress updates
	Integration With Other Devices	Syncing with wearables; compatibility with smartphones; linking to electronic health records
	Content Quality & Educational Value	Evidence-based tips; clear explanations; self-care instructions; relevant health articles
	Data Security Features	Encryption indicators; privacy controls; secure login systems; transparent data policies
Healthcare System & Provider Influence	Provider Encouragement & Recommendation	Doctor endorsement; follow-up reminders; provider credibility; advice to continue usage
	Support From Healthcare Teams	Technical help; explanation of results; guidance in setting goals; emotional reassurance
	Integration Into Clinical Care Pathways	Use during appointments; shared dashboards; routine check-ins; treatment alignment
	Communication Through Digital Tools	Messaging with providers; appointment reminders; automated check-ins; feedback on uploads
	Health System Accessibility & Resources	Access to clinics; wait times; reimbursement options; availability of digital programs
	Follow-Up & Accountability Structures	Scheduled tracking; regular progress reviews; provider oversight; shared responsibility
Social, Environmental, and Contextual Influences	Social Support & Peer Influence	Family encouragement; sharing progress; peer comparison; social norms
	Community & Cultural Attitudes Toward Technology	Community openness; generational differences; cultural comfort with technology
	Environment & Technological Infrastructure	Internet speed; device availability; rural/urban conditions; Wi-Fi reliability
	Cost and Socioeconomic Factors	Ability to afford devices; data costs; concerns about hidden fees
	Competing Life Demands & Stressors	Family responsibilities; work pressure; health crises; time constraints; emotional fatigue
	Privacy Expectations in Social Context	Fear of judgment; concern about others seeing data; desire for autonomy

Participants described a range of personal factors that shaped their engagement with digital self-management tools. Many emphasized the importance of health motivation and a proactive orientation, noting that worsening symptoms or fear of disease progression pushed them toward more consistent use. As one participant shared, "I started using the app seriously when my doctor warned me things could get worse if I didn't take control." Digital literacy also played a key role, with participants describing varying degrees of confidence navigating apps and devices. Emotional responses—ranging from excitement about monitoring progress to anxiety or frustration when encountering technical problems—were common. The perceived usefulness of tools strongly influenced ongoing engagement;

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participants valued clear data visualizations and reminders that helped integrate self-care into daily routines. Lifestyle fit emerged as a recurring concern, with several noting that busy schedules or fatigue often interrupted tool use: "Some days I'm exhausted after work and the last thing I want is to log anything." Privacy considerations shaped personal boundaries, especially among those cautious about sharing sensitive health information. Finally, participants highlighted the need for accessibility features due to vision limitations, cognitive load, or physical constraints that affected their ability to consistently interact with digital platforms.

Participants consistently emphasized the central role of technology design and performance in supporting or hindering their engagement. Ease of use and intuitive interfaces were among the strongest facilitators, with participants describing how "clean layouts" and "step-by-step instructions" made tools approachable. Conversely, technical reliability issues—such as crashes, slow loading, or syncing delays—were described as significant barriers. As one participant explained, "If the app freezes even once, I lose trust. I won't go back to it for days." Personalization also emerged as an important facilitator, with many valuing customizable reminders, adjustable goal-setting, and dashboards that aligned with their health needs. The quality of data feedback influenced motivation, particularly when visual trends made progress more tangible. Interoperability with other devices, such as smartwatches, was appreciated for reducing manual entry. Participants additionally highlighted the importance of high-quality educational content that helped them better understand their condition. Finally, data security features such as two-factor authentication and clear privacy policies increased trust in the technology: "I only use apps that tell me exactly what happens to my data."

Participants noted that engagement with digital self-management tools was strongly shaped by interactions with healthcare providers and broader system structures. Provider encouragement, especially when paired with clear guidance on how to use the tool, significantly strengthened motivation. One participant shared, "When my nurse checked my logs during each visit, I felt like it actually mattered to keep up with it." Support from healthcare teams—whether through explaining data, helping troubleshoot issues, or validating emotional experiences—further promoted use. Integration of digital tools into clinical pathways, such as shared dashboards during appointments or automated uploads to electronic health records, gave participants a sense of continuity and legitimacy. Communication features embedded within the tools, including messaging or automated follow-ups, also reinforced accountability. System-level factors such as access to care, clinic workload, and availability of digital health resources affected tool uptake. Participants also recognized the importance of consistent follow-up; as one expressed, "When my doctor reviews my progress, I feel responsible. It keeps me on track." These interactions collectively positioned the healthcare system and its providers as central drivers of ongoing engagement.

Finally, participants described several social and contextual factors shaping their engagement with digital health self-management. Social support from family and peers played an important role, particularly when others encouraged progress tracking or shared their own health journeys. Cultural and community attitudes toward technology influenced comfort levels, with some noting generational divides: "My daughter loves these apps, but people my age sometimes feel intimidated by them." Environmental factors such as reliable internet access, availability of devices, and rural–urban infrastructure differences also affected the feasibility of regular use. Socioeconomic factors, including the cost of devices or data plans, emerged as barriers for some participants. Life stressors and competing demands—such as work obligations, caregiving responsibilities, or health crises—often disrupted routines and reduced engagement. Moreover, participants expressed concerns about privacy in social contexts, emphasizing the desire to avoid judgment or unwanted oversight: "I don't want anyone looking over my shoulder and seeing my health stuff." These contextual influences collectively shaped whether participants felt supported, constrained, or ambivalent about incorporating digital tools into their health practices.

4. Discussion and Conclusion

The purpose of this qualitative study was to explore the factors shaping patients' engagement with digital health self-management tools, based on interviews with Canadian adults using a range of mHealth and eHealth platforms. The findings revealed that engagement is a multidimensional construct shaped by personal determinants, technology-related characteristics, healthcare system influences, and social-contextual environments. These results align with and extend the current literature, which emphasizes that patient engagement with digital health tools depends on the dynamic

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interaction between individuals, technologies, and their surrounding contexts (Leach et al., 2021; Shaw et al., 2019; Zhong et al., 2025). The discussion below situates these findings within existing scholarship while highlighting the relevance of user-centered, technologically robust, and contextually appropriate digital health solutions.

A central finding of this study concerns the role of personal determinants in shaping digital engagement. Participants' motivation to manage their health, levels of digital literacy, emotional responses to technology, and lifestyle compatibility significantly shaped their use. This resonates with research demonstrating that higher digital competence and stronger health motivation enhance self-management behaviors across chronic conditions (Osokpo, 2025; Ouédraogo et al., 2023, 2024). Consistent with our participants' reports of feeling overwhelmed or anxious when encountering technical challenges, earlier findings highlight the emotional and psychological components of engagement, including frustration, cognitive load, and perceived burden (Lucia et al., 2024; Schmaderer et al., 2022). Likewise, the importance of perceived usefulness echoes evidence that users are more likely to sustain digital self-management when they believe the tools offer meaningful insights, enhance self-efficacy, or support daily decision-making (Delva et al., 2020; Sze & Kow, 2023). The present findings therefore reinforce the need to account for patient-driven motivations and emotional experiences when designing digital tools that aim to support self-management over time.

The study also identified technology-related factors as major drivers of engagement. Participants emphasized usability, personalization, reliability, and data visualization as crucial to their continued use of digital tools. These observations strongly align with broader evidence indicating that intuitive interfaces, clear navigation structures, and customizable features contribute to higher user satisfaction and sustained engagement (Bendtsen et al., 2024; Braake et al., 2024; Sirohi et al., 2025). Many participants described disengaging after encountering app crashes, syncing issues, or confusing layouts, echoing previous studies linking technical challenges to attrition in digital health interventions (Breil et al., 2021; Cao et al., 2022). Tools that offered meaningful visual feedback, such as graphs or progress indicators, were perceived as more motivating—consistent with findings that data-driven insights encourage proactive self-management and enhance behavioral adherence (Duckworth et al., 2024; Yang et al., 2020b). Participants also emphasized concerns about data privacy and security, reflecting ongoing global apprehensions regarding digital data stewardship in healthcare (Alshehri & Alshaikh, 2021; Zhao et al., 2020). Together, these findings reinforce that technical stability and trustworthiness are essential attributes of effective digital self-management tools.

A third major theme concerns the influence of healthcare providers and systems. Participants consistently reported that provider endorsement, clinical integration, and ongoing support strengthened their willingness to use digital tools. These findings mirror prior research demonstrating that healthcare professional engagement significantly predicts patient uptake and sustained use of digital self-management technologies (Marini et al., 2023b; Schmaderer et al., 2021; Varsi et al., 2021). When clinicians reviewed digital data during consultations or provided technical and emotional guidance, participants felt validated and motivated, consistent with evidence that clinical integration enhances patients' sense of accountability and reinforces the perceived value of digital tools (Jendly et al., 2023; Shah et al., 2025). Conversely, participants who felt that providers lacked familiarity with digital tools or that digital monitoring was disconnected from clinical care described disengagement and uncertainty, paralleling findings that insufficient provider involvement undermines patient trust and adherence (Hägglund et al., 2022; Lucia et al., 2024). These results underscore the importance of embedding digital interventions into clinical workflows and ensuring that providers are knowledgeable and supportive of digital health technologies.

Finally, the study highlights social, environmental, and contextual influences that shape engagement. Family encouragement, community attitudes, socioeconomic circumstances, and environmental conditions such as internet access significantly influenced whether participants used digital tools consistently. These findings are aligned with scholarship emphasizing that social support plays a critical role in sustaining digital self-management, particularly for individuals managing chronic disease (Li et al., 2024; Nalini et al., 2024). Several participants described struggles balancing digital tracking with competing responsibilities or stressful life events, reflecting patterns observed in studies reporting that daily stress, caregiving duties, and work pressures interrupt engagement with mHealth tools (Sibuyi et al., 2022; Sze & Kow, 2022). Participants who faced financial limitations or lived in environments with unreliable connectivity also reported significant challenges, which aligns with evidence that

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digital health inequities are exacerbated by cost, infrastructure limitations, and geographic disparities (Wang et al., 2021; Wannheden & Revenäs, 2020). Concerns about social privacy—such as reluctance to have others observe health data—were also reported, paralleling findings from earlier research highlighting privacy sensitivities in shared or communal settings (Delva et al., 2020; Sibuyi et al., 2020). In sum, the results underscore that engagement cannot be understood solely as an individual behavior but must be contextualized within broader socio-environmental structures.

Taken together, the findings illustrate the complex interplay between personal motivations, technological design, provider involvement, and environmental context in shaping patient engagement with digital self-management tools. These results reinforce the growing consensus that digital interventions must be not only technically robust and user-friendly but also deeply aligned with patients' lived experiences, healthcare interactions, and social realities (Anwar et al., 2025; Cao et al., 2021; Zhong et al., 2025). The study contributes to the literature by offering a holistic and patient-centered understanding of engagement and by underscoring the importance of qualitative inquiry in capturing the intricacies of real-world digital health use. Such insights are essential for developers, clinicians, and policymakers seeking to design and implement effective, equitable, and sustainable digital self-management solutions across diverse patient populations.

This study has several limitations that should be acknowledged. First, the study relied on a sample of 21 participants from Canada, which may limit the broader transferability of findings to populations in other countries with different healthcare systems or digital infrastructures. The perspectives captured here may not fully represent those of individuals with limited access to technology, low digital literacy, or marginalized socio-demographic backgrounds. Second, self-reported experiences may be subject to recall bias or social desirability bias, particularly when discussing interactions with healthcare providers or sensitive issues such as privacy concerns. Additionally, although theoretical saturation was achieved, a larger or more diverse sample might reveal additional nuances or subgroup-specific experiences. Finally, the study focused solely on users who had experience with digital self-management tools, meaning the perspectives of non-users or those who discontinued use were not captured.

Future research should explore engagement across more diverse socio-demographic groups, including populations with limited digital access, linguistic barriers, or differing cultural attitudes toward technology. Longitudinal qualitative studies could provide deeper insight into how engagement evolves over time and across different stages of disease management. Comparative research across countries or healthcare systems may help identify structural factors that support or hinder digital adoption. Additionally, integrating perspectives from healthcare providers, caregivers, and technology developers could offer a more comprehensive understanding of the broader ecosystem that shapes engagement. Finally, there is a need for mixed-methods studies that link subjective experiences with objective usage data to better understand the relationship between behavioral patterns and psychological or contextual factors.

Programs aiming to promote digital self-management should prioritize user-friendly designs, personalization options, and robust technical performance. Healthcare systems should invest in training providers to integrate digital tools into clinical workflows and to offer ongoing support that reinforces patient motivation and confidence. Efforts should also address socio-environmental barriers by improving digital access, affordability, and literacy across diverse communities. Developers and policymakers should consider equity-focused approaches to ensure that digital health solutions are accessible, trustworthy, and adaptable to the needs of patients with varying abilities, resources, and lifestyles.

Authors' Contributions

Authors contributed equally to this article.

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

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

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