

# A Scoping Review of Family Resilience in the Digital Health

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**Abstract.** Digital health facilitates easier access to healthcare services and information, but it also presents new challenges such as low digital literacy and demands for technology adaptation. In this context, the concept of family resilience is highly relevant to understanding how families can survive, adapt, and grow amid changes in digital health. This literature aims to map research findings related to the role and factors of family resilience in facing digital health challenges. The method employed is a scoping review. The review results indicate that families with open communication, adequate digital literacy skills, and responsive parenting are proven to be more resilient in facing digital health challenges. Family involvement in the use of collaborative digital technologies such as educational videos and teleconsultation can play an important role in building family resilience. In this regard, resilient families are those capable of learning, adapting, and growing together in facing continuously evolving digital changes.

**Keywords:** digital health, family resilience, digital literacy

## 1 Introduction

Technology has become an essential part of human life today and has brought significant changes to family structure and dynamics. Internet access, accompanied by various digital devices and applications, has facilitated the acquisition of information, healthcare services, financial transactions, and modes of interaction and communication among family members. Technology not only assists daily human activities but also transforms contemporary cultural, economic, and social systems [1]. One significant change has occurred in the health sector through the concept of digital health. Digital health is the utilization of technology and information to support health and related fields [2]. Digital health encompasses the use of technology in wearables (such as wristwatches, gloves, insoles, headgear, or rings), mobile health (mHealth), online educational platforms, and telehealth, which delivers and facilitates health-related services (including medical care, provider and patient education, health information services, and self-care) via telecommunications and digital communication technologies. Digital healthcare offers a wide range of possibilities and has the potential to improve the quality of patient care. This transformation expands service access, especially for populations previously difficult to reach through conventional healthcare systems [2], [3].

On the other hand, the implementation of digital health also presents new challenges for many individuals, such as the digital divide, economic barriers, low digital literacy, limited digital access, demands for digital adaptation, and changes in family interaction patterns that can influence how each family member utilizes technology [4]. In this context, the role of the family is not merely as a beneficiary of technology, but also as the primary social unit that manages health-related decisions, care patterns, and collective well-being [5]. The concept of family resilience becomes particularly relevant in understanding how families adapt to changes in digital health. Family resilience is defined as the family system's capacity to withstand, adapt, and recover from stress, crises, or significant changes [6]. Furthermore, Family resilience is not an innate trait but a dynamic process that develops through interaction and adaptation to shifting socio-cultural contexts. Resilience reflects not only the family's internal strengths but also its ability to manage external resources to face challenges [6].

In the digital era, families are required to balance technology utilization with the maintenance of interpersonal relationships, emotional support, and family values. Several studies indicate that families capable of fostering open communication, role flexibility, and strong emotional support tend to exhibit higher levels of resilience, including in facing digital pressures [6], [7], [8]. Nonetheless, further research is necessary to understand how families specifically adjust to these changes and identify effective strategies to enhance family resilience against digital transformations. Based on this background, it is important to review the extent to which scientific literature has examined the relationship between digital health and family resilience. This scoping review aims to map empirical and conceptual evidence regarding family resilience in facing digital health challenges, highlighting influential factors and strategic approaches that can be applied to strengthen family resilience. The review is expected to contribute theoretical and practical insights to the development of digital-based social interventions and family policies.

Most previous studies have predominantly focused on the technical aspects of digital health, such as the effectiveness of telemedicine services or the use of wearable devices, without thoroughly examining the social and psychological dynamics of families, which form the primary context for technology use. Conversely, research on family resilience has generally addressed the family's capacity to cope with economic crises or natural disasters. However, explicit connections to digital transformation's impact on family functions, communication, and well-being remain limited [9], [10], [11], [12]. Therefore, a comprehensive study is necessary to explore how families build resilience in response to digital health changes and how technology can be positively harnessed to strengthen family cohesion.

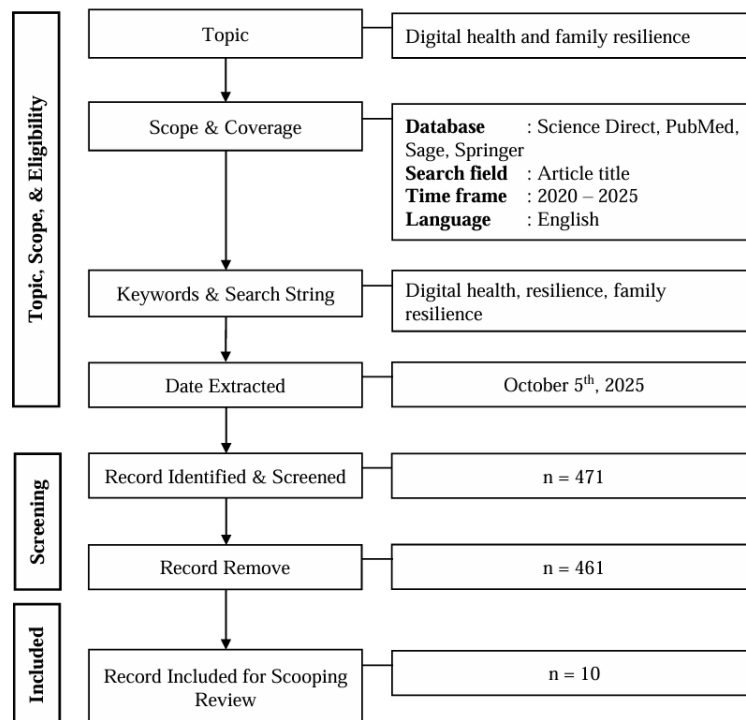
## **2 Research Method**

This study employed a Systematic Literature Review (SLR) approach to map and synthesize adaptive mechanisms of family resilience in the context of digital health challenges. The review process followed the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines to ensure methodological transparency and rigor [13]. A structured search was conducted across several electronic databases, including PubMed, Science Direct, Sage Publication, and Springer, covering publications from 2020-2025. The search strategy combined several keywords such as "Digital Health", "Resilience", "Family Resilience".

**Table 1.** Exclusion and Inclusion Criteria

No	Inclusion Criteria	Exclusion Criteria
1	Indexing Sinta or Scopus	Theses, dissertations, or undergraduate projects
2	Published between 2020-2025	Published more than 6 years ago
3	Research using quantitative, qualitative, or experimental methods	The systematic review
4	Full text articles available and accessible	Article not available in full text and not open access
5	Discussing family resilience in digital health	Discussing only digital health or resilience

Based on database searches conducted between 2020-2025, a total of 471 records were initially identified. After title screening, 180 articles were excluded due to lack of relevance. The remaining studies underwent abstract review, which resulted in the exclusion of 150 additional records, including conceptual papers and student theses. Subsequently, 141 full-text articles were assessed for eligibility. Of these, 75 studies were excluded because they did not specifically address family resilience in digital health contexts, and 56 articles were removed for not employing quantitative, qualitative, or experimental approaches. Ultimately, 10 empirical studies met all inclusion criteria and were included in the final synthesis and thematic analysis.



**Fig. 1.** Prisma Flow Diagram

### 3 Results and Discussion

Following the article selection and quality assessment procedures described in the previous section, each eligible study was systematically reviewed. The extracted information including authorship, publication year, research design and key findings is summarized in the table 2 to facilitate comparison across studies.

**Table 2.** Results of data extraction

No	Author's	Title	Method	Results
1	Astrid et al., (2023)	The utilization of animated video technology on family resilience in facing the covid-19 pandemi.	Quantitative study with quasy-experimental design and a randomized pre/post-test control group design. 289 respondents, 197 in intervention group and 92 in control group.	The use of animated video significantly improved family knowledge and resilience in the intervention group after they watched the videos (containing educational information about COVID-9 and have the potential to function as an effective educational tool for healthcare professionals and nurses in delivering information related to COVID-19). Through this approach, families were able to better understand preventive measures and adaptive coping strategies in dealing with the challenges caused by COVID-19.
2	Burke et al., (2023)	Children's digital play as collective family resilience in the face of the pandemic.	Using day-in-life methodology and narrative inquiry, disseminate and examine observations collected on children aged 2-10 during lockdown in a Newfoundland neighbourhood.	The study found that during the COVID-19 lockdown, children utilized platforms such as TikTok, YouTube, and Zoom to create digital games and fulfill their social needs by connecting with friends online due to pandemic restrictions. The research also identified parental support in facilitating children's challenges with internet connectivity, Zoom links, and laptop usage. This demonstrates the interrelation between digital play and digital literacy in supporting family resilience.
3	Cleffi et al., (2022)	Using telehealth to conduct family-centered, movement intervention research in children with autism spectrum disorder during the covid-19 pandemic	Experimen using randomized control trial	Interventions designed with family centered approach was made for several family members including parents and siblings can participate in activities that promote both physical engagement and social interaction, support the development of children's social and communication skills, reduce parental stress, particularly during challenging situations such as the COVID-19 pandemic, therapy

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4	Gruebner et al., (2023)	Mental health challenge and digital platform opportunities in patients and families affected by pediatric neuromuscular diseases- experiences from Switzerland	Mix method design. A qualitative study (15 participants). A conference was held with 110 participants including DMD researchers, practitioners, patients, and family members	contributing to greater family resilience and a more supportive environment for children with autism spectrum disorder. The use of digital platforms presents several practical considerations, including the need for adequate social and professional support, ensuring the reliability and trustworthiness of online health information as well as digital interventions that focus on psychosocial support and family relationships. Therefore, a family centered approach in digital health and social care is considered essential.
5	Keller & Hegel (2022)	A video delivered family therapeutic intervention for perinatal women with clinically significant depressive symptoms and family conflict: indicators of feasibility and acceptability	Mixed method (Randomized control trial and quantitative)	The REST intervention represents a psychoeducational program delivered through video conferencing technology, requiring therapists to possess basic technological competencies and participants generally required one to three attempts to become comfortable using certain features of the platform. The findings show that perinatal women consistently attended all scheduled sessions, while family members participated in approximately 80% of the sessions and participants completed around 80% of the assigned homework tasks.
6	Li et al., (2025)	The impact of digital literacy on the health behavior of rural older adults: evidence from China	Quantitative, with data from 1207 rural older adults aged 60 and above in the 2020 China rural revitalization survey (CRRS).	This study provides important policy implications for promoting healthy aging and digital inclusion among rural older adults in China, particularly through improving rural digital infrastructure, implementing digital literacy training programs, and encouraging older adults to effectively use digital.
7	Marshall et al., (2023)	New pathways to crisis resilience: solutions for improved digital connectivity and capability in rural Australia	Quantitative with 100 participants	Digital Connectivity Solution Packages aimed at overcoming weaknesses in existing rural telecommunications policies and investment frameworks in Australia in order to enhance community resilience during crises. The proposed approach is based on three main principles: strategic region-wide connectivity that provide broader benefits for rural communities, highlights the need to strengthen digital literacy and capabilities among rural populations,

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8	Rosenthal et al., (2024)	Using inpatient telehealth for family engagement: a mixed methods study of perceptions from patients, families, and care tema providers	Mixed method design. The quantitative (surveys from 214 individuals (33 patients, 145 family, 36 providers) were evaluated. 134 free text responses and conducted 21 interviews.	and the approach encourages a “bounce forward” perspective, focusing on building long-term digital capacity and adaptability. The implementation of inpatient telehealth was found to improve both patient and family experiences by strengtening relationships and increasing emotional support, enable families to remain connected with patients during hospitalization, contributes to better patient care by facilitating more effective information sharing and enegegement between healthcare providers and family members. This technology provides a direct communication channel that helps families better understand the patient's condition and treatment plan.
9	Smeallie et al., (2022)	Enhancing resilience in family caregivers using an mhealth app	Mix method combining qualitative and randomized controlled trial	The roadmap platform designed to be user-friendly and accessible, also incorporates digital features, including the collection of digital signals through sensors, daily reflections on positive experiences, and journaling activities This approach plays an important role in supporting the mental, emotional, and behavioral well-being of patients and caregivers during the acute phase of HCT treatment, thereby contributing to stronger resilience in the face of intensive medical care.
10	Uddin & Hasan, (2023)	Family resilience and neighborhood factors affect the association between digital media use and mental health among children: does sleep mediate the association?	Quantitative study with 45,989 children (6-17 years) from the national survey of children’s health data from 2019 to 2020.	These findings underscore the importance for parents and caregivers to monitor and regulate children's digital activities and to foster an environment that supports mental well-being in the digital age. Limiting screen time, promoting offline social interactions, and ensuring good sleep hygiene are key strategies to mitigate these adverse effects.

The scoping review results reveal that family resilience in the context of digital health is an adaptive process involving families' ability to manage technological changes, maintain emotional functioning, and navigate risks arising from the digitalization of healthcare services. The review of ten selected articles identified key contributing factors to family resilience, including open communication, emotional support, digital literacy, and role flexibility. These factors collectively strengthen the family's capacity to face digital health challenges. Based on the review results, it can be seen that digital media is not only a source of information and services for accessing health, but can also build communication and emotional support

between family members in facing digital health challenges. Research by Rosenthal et al. in 2024 found that the use of inpatient telehealth can enhance patient-family relationships through virtual communication during hospitalization. This interaction strengthens emotional support and facilitates information exchange between medical teams and families about patient conditions and care plans, thereby increasing family involvement in medical decision-making [14].

Keller and Hegel in 2022 similarly demonstrated that family-based video interventions effectively boost family presence and participation in perinatal therapy, improving communication openness and familial closeness [15]. Astrid et al. in 2023 reported that animated educational videos during the COVID-19 pandemic enhanced family knowledge and resilience by providing health information and reinforcing communication and togetherness [16]. Likewise, Burke et al. in 2023 showed how children's digital games during COVID-19 lockdown used platforms like YouTube, Tiktok and Zoom to connect with friends, express emotions, and foster creativity, with parents actively facilitating these activities [17]. Research by Gruebner et al. in 2023 highlights that families with children suffering from neuromuscular diseases in Switzerland face significant psychosocial challenges and emphasize the need for safe, credible, family-focused digital platforms. Participants in their study stressed the importance of relationship-based digital interventions to enhance family resilience. These platforms, when trustworthy and supportive, can provide reliable information and safe spaces for social interaction, addressing mental health resilience during critical medical phases and ongoing care [18].

Similarly, The study by Cleffi et al. in 2022 highlights the effectiveness of a telehealth family-centered intervention for children with Autism Spectrum Disorder during the pandemic. This approach actively involves the family as facilitators of therapy, yielding positive outcomes such as improvements in children's motor function and strengthened communication and bonding within the family. The telehealth model enabled collaboration between trainers and caregivers, making it easier for families to replicate therapeutic activities at home. These findings confirm that telehealth family-centered interventions can enhance family resilience by promoting active participation and shared responsibility in the healthcare process, ultimately supporting the child's long-term development [19]. The study by Smeallie et al. in 2022 explores the use of the mobile health application "Roadmap" designed to support individuals undergoing Hematopoietic Stem Cell Transplantation (HCT), their caregivers, and healthcare providers in building and maintaining resilience throughout the treatment process. Roadmap offers a series of activities focused on strengthening self-care and self-management, including daily positive reflections, journaling, and monitoring digital signals via sensors. These simple strategies have been shown to effectively enhance positive thoughts, emotions, and behaviors, such as optimism and gratitude. Users found the Roadmap app easy and convenient to use, and it significantly contributed to increasing resilience for both patients and caregivers during the acute phase of medical care. The qualitative evaluation highlighted key themes including app usage, ease of use, user experience, and the app's ability to foster resilience. Facilitators included convenience and the app being non-harmful, while barriers involved caregiver burden during intense treatment phases. The study suggests that features enabling personalization and reminders could further improve long-term engagement with the app [20].

Actively involving families as facilitators in therapy improved children's motor functions and strengthened family communication and closeness. These findings confirm that digitally delivered, family-centered telehealth programs can foster resilience by promoting active

participation and shared responsibility in healthcare processes. The utilization of digital technology requires families to possess digital literacy skills that encompass the ability to access, critically assess the credibility of, and wisely manage health information [21], [22]. Research conducted by Uddin & Hasan in 2023 highlights the crucial role of parents in limiting excessive digital media use by children to prevent mental health issues. Families that maintain good communication and supervision patterns can reduce risks of anxiety, depression, and sleep disorders caused by digital exposure [23]. Therefore, effective family control and communication serve as important protective mechanisms in balancing technology use. Digital literacy goes beyond technical skills, it involves adapting to and using digital media judiciously. Establishing a balance between digital and physical activities and fostering family collaboration in digital media use further strengthen families' adaptive capacities [24].

Research by Li et al. in 2025 demonstrates the importance of digital literacy among the elderly, particularly in rural China. The study found that digital literacy enhances health behaviors of the elderly in these areas by encouraging learning about health through digital platforms, promoting healthier habits such as regulated consumption of salt and sugar, and increasing physical activity. Engagement with digital activities was also linked to greater happiness and more positive future expectations among the elderly. However, the digital divide remains a significant barrier [25]. Similarly, Marshall et al. in 2023 in Australia highlighted the digital divide as a major obstacle for rural families in accessing and effectively utilizing digital health services. Their study emphasized the need for strategic policies, such as digital connectivity solution packages, to expand access to digital resources [26]. Overall, this body of research underscores that family resilience in the era of digital health is shaped through the dynamic interaction between digital skills, communication, emotional support, and role-sharing. This process enables families not only to withstand digitalization's pressures but also to leverage technology to improve collective health outcomes.

## 4 Conclusion

Digital technology has expanded access to healthcare services, enhanced communication efficiency between providers and patients, and supported independent family health management. However, the advancement of digital health also demands families' adaptive capabilities to overcome challenges such as the digital divide and low digital literacy. The concept of family resilience offers a crucial framework for understanding how families adapt to these digital health challenges. Families possessing high digital literacy, open communication patterns, and responsive caregiving roles demonstrate greater resilience in facing digital health challenges. Additionally, collaborative digital technologies such as educational videos, teleconsultations, and digital platforms or others can strengthen family resilience. A resilient family is thus characterized by its ability to learn, adapt, and grow together amidst continuous digital transformations.

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