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The future of digital care: Drafting design spaces

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Abstract: This paper presents the findings of a scoping review aimed at exploring the key themes within the digital care domain. The study encompasses the research methodology employed, which adheres to established guidelines for scoping reviews—the formulation of research questions, systematic literature screening, data charting, and result visualization—and explores the principal themes emerged in the field of digital care. These themes include Distributed Care, Self-Care, and Health Booster Technologies, each of which is expounded upon in detail. The paper emphasizes how digital technologies, such as mobile applications, wearable devices, and IoT systems have the potential to reshape the care paradigm by improving and enhancing self-management, care delivery, self-care, and mental health augmenting overall well-being. Furthermore, the paper places a significant emphasis on the pivotal role of design in shaping future directions and stresses the importance of adopting a multifocal approach, including participatory and co-design, to navigate the opportunities and challenges within this evolving domain effectively.

Keywords: care, design, digital technologies, scoping review.

1. Introduction

This paper presents the results of a one-and-a-half-year research project conducted by D\Tank, the Think Tank of the Department of Design of Politecnico from February 2022 until April 2023.

The research, titled "Design for Digital Care," aimed to define new design scenarios within the digital care domain. It involved a team of fourteen persons, including PhD students, research fellows, researchers, associate, and full professors. The choice of the "care" topic was made due to its strategic importance. National and European initiatives emphasize the significance of Digital Care. Italy, through its National Recovery and Resilience Plan (PNRR), has committed over 15 billion euros to advance the mission "Opportunities for the National Healthcare System" and the "One Health" paradigm. Additionally, Horizon Europe has allocated a substantial budget of 8.2 billion euros to the health cluster.



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The entire research has unveiled challenges associated with emerging care models, novel roles, and profiles (i.e., digital care givers) arisen with the advancement of technology and digital tools. These challenges are shaping shared pathways among various industrial sectors, design practice and research.

In this paper, authors will delve into the key themes and challenges in the digital care domain, focusing on the scoping review phase. The text is organized into four main sections. The methodology section provides a comprehensive examination of the scoping review process. Following this, the results are presented, and the three major themes that emerged from the review are explored. The paper concludes with a discussion about future directions to take on from a design perspective.

2. Methodology

The format of a scoping review was selected as the most appropriate methodology for its iterative nature (Peters et al., 2015). In general, a scoping review aims at creating a “narrative account of existing literature” (Arksey and O’Malley, 2005) and has the potential to identify the major themes that make up a field of study as well as the significant sources and types of data in fields that haven't been well investigated (Badger et al., 2000; Gough et al., 2012). The stages adopted for the review followed both Peters’ (2015) and Arksey and O’Malley’s (2005) guidelines for scoping reviews that generally include the following steps: determining the research question to be addressed; locating works that are pertinent to the research question; screening and choosing works to be included in the review; charting the data within the included studies; gathering, summarizing, and visualizing review results.

The review required an interdisciplinary approach, emphasizing relevant research pertaining to the topic at hand, aligning with much of the work conducted by the European Commission in Cluster 1 'Health' under the Horizon Europe Programme (European Commission, 2023).

At the earliest stage, the research team adopted a much broader approach by searching current and future trends related to digital care discussed within future reports created by design agencies as among which Fondazione Symbola (2021), Accenture Interactive (2022), NextAtlas (2021), and within events such as Wired Health 2022¹

These primary steps provided a sufficiently perspective on the topic, enabling a preliminary identification of relevant subtopics and the collection of a wide range of keywords that were subsequently adopted for a more structured review such as: remote care, mental health, mobile health, digital technologies, community care and so on.

After this first preliminary scan that drove the entire analysis, the research team, which included scholars of international background and heterogeneous expertise (i.e., product design, interior design, interaction design, service design, product design), developed two main

¹ <https://health2022.wired.it/>

research questions “What will be the main driving forces for Digital Care?” “What will be the main directions that will define digital care in the near future?”

From this research questions, an analysis through an in-depth literature analysis was carried out from February 2022 to April 2022, using Scopus as the main search engine.

Six main strings were adopted, using the keywords identified in the preliminary search, specifying a time range from 2014 onwards.

The result lists were organized by order of relevance and examined independently by 6 reviewers reading titles, keywords, and abstracts. When the publication seemed to approach the topic of interest, it was downloaded for further review.

Once all relevant articles were downloaded, reference lists were examined. When some of the keywords were mentioned in the title, articles were also added to the pool of publications.

Each string was analyzed, and articles were included and excluded according to some criteria: peer reviewed journal articles, conference papers describing literature review, case studies and ethnographies, applied research, projects and trials, articles published in the English language considered relevant from the design perspective. On this point for example specific medical articles have been excluded as well as specific technical experimentation.

Table 1 reports the number of articles evaluated for each string and the ones kept after the analysis.

Table 1 Strings and numbers of related articles

Strings	N° articles resulted	N° articles kept after the analysis
“remote” AND “mobile” AND “IoT, AND “care”	120	33
“wellbeing” OR “care” AND “digital” AND “community” and “person-centred”	98	35
“digital health” AND “equity” AND “mental health” OR “wellbeing”	150	73
“mental health” OR “wellbeing” AND “remote care” AND “community care AND “digital”	105	33
"self-care" OR "well-being" AND "wearable technologies" AND "design"	91	32
"lifestyle" AND "self-care" OR "wellbeing" AND "digital technology"	23	16

After this selection, the research team organized and synthesized the collected sources of data according to 'key issues and themes' (Arksey and O'Malley 2005, 18). During the articles' review similar topics emerged and the team decided to organize them according to three main clusters identifying emerging trajectories within the broad digital care arena: 1) Distributed Care; 2) Selfcare; 3) Health Booster Technologies.

Once defined some emerging topics the researchers performed a grey literature review to further explore and validate the emerging themes and to avoid the risk of omitting other significant aspects.

The grey literature search plan encompassed several techniques, including the use of a customized Google search engine, targeted websites (i.e., research group projects, relevant companies' experimentations), online magazine (i.e., dezeen, tech crunch) expert consultations.

To conclude, the research team organized data to make sense of it thematically by creating a visual map.

They first created analytical tables grouping the articles according to the identified topics, and they used data visualization tool such as RawGraph (Mauri et al., 2017) to create visual maps of the identified emerging topics in the digital care area.

The results of the analysis and the maps generated are illustrated in the section below.

3. Results: Emerged themes within digital care domain

As highlighted in the previous section, the analysis of scientific articles and papers identified convergences on three major themes of Digital Care:

- 1) Distributed care
- 2) Selfcare
- 3) Health booster technologies

Each of these themes presents design challenges, which are increasingly relevant for shaping shared pathways towards fair, accessible, and inclusive Digital Care.

The following map (see figure n°1) displays the connections between various keywords that have emerged from the analysis of literature. The relevance of a word is represented by its size, and the color of different connections indicates their belonging to one of the three identified macro-themes. The most prominent keywords are in the areas of convergence between the macro-themes.

ital literacy for informal caregivers is essential not only for strengthening the caregiver-patient relationship and care management but also for reasons of equity and accessibility. (Arighi, A., et al. 2021)

Moreover, we are witnessing the shift from a care model centered solely on hospitals to one based on community and individual participation as highlighted by the World Health Organization (WHO).

The so-called **community-centered care** is evident in the case of isolated patients, who cannot connect with professionals for direct assistance or monitoring but can also establish and promote information-sharing practices on digital platforms, becoming part of **physical-virtual communities**. Both physical and virtual communities enable agile sharing of experiences and practical knowledge, thereby increasing trust in digital technology and improving its management and familiarity. Research shows that the care involving active community participation is more likely to overcome obstacles such as a lack of trust and digital literacy. (Kringos, D.S.; et al 2015; Kor, A. L., et al 2016; Johansson, V., et al 2021)

In the United Kingdom, considerable efforts are being made within governance systems to support the accreditation of community co-managed by individuals. An example is the Care 4.0 project by the Scottish and UK governments, aiming to develop digital health and care services, focusing on connections between organizations, individuals, and digital tools. This initiative wants to provide personalized services to individuals, offering preventive approaches based on the empowerment of individuals and communities. (Chute, C., & French, T. ;2019).

Other experimental proposals suggest systematic and integrated care processes that involve authorities, the healthcare system, and both physical and virtual communities comprehensively. Some initiatives focus on specific user groups considered vulnerable, where community-mediated care is believed to have a significant impact on the effectiveness of therapies and overall health. Examples include support for elderly individuals, women with postpartum syndrome, and individuals suffering from neurodegenerative diseases such as dementia or Alzheimer's.

In line with this relevant trend is the Virtual Dementia Friendly Rural Communities (Verily Connect) project designed to educate, increase access to information, and support informal caregivers of dementia patients through an integrated mobile app/website and video conferencing service. (Wilding et al 2021)

Physical-virtual communities can also help individuals share their distress and overcome the stigma associated with illness. A study conducted by researchers at the University of Washington and Seattle Children's Hospital shows how social media can facilitate community-mediated care, especially in the virtual realm. The project, known as IMAGINE (Interactive Maternal Group for Information and Emotional Support), involves cognitive-behavioral therapy to prevent perinatal depression in young women and adolescents during pregnancy, facilitated by a group of experts through social media. The research has highlighted how stigmatization can exacerbate depression and distress among pregnant young women. In this case,

social media serves as a space where participants have access to non-judgmental and confidential support, alongside peers, to navigate available resources supporting their clinical condition. (Gewali, A et al 2021)

Summarizing the review showed a new paradigm of Distributed Care; it finds its expression in the use of **digital technologies** and **tools** to implement and optimize the **delivery of care**, involving a network of services consisting of **community, patients and infrastructure**.

3.2 Self-care

In recent years, there has been an increasing emphasis on the notion of **Self-Care**.

The World Health Organization (WHO) describes it as a conscious act that a person undertakes to promote their physical, mental, and emotional health. Self-Care includes **comprehensive and holistic processes** that encompass **hygiene** (both general and personal), **nutrition** (type and quality of food consumed), lifestyle (physical activity, leisure, etc.), **environmental factors** (living conditions, social habits, etc.), and **socioeconomic factors** (income level, cultural beliefs, etc.).

Increasingly, health applications available in the market incorporate persuasive strategies for disease prevention and the adoption of healthy lifestyles in areas such as fitness, stress management, nutrition, and sleep. Through AI-based recommendation systems, these apps can provide targeted advice and **personalized suggestions on how to improve one's lifestyle**, offering alternative choices for the future. (Kotz, D., et al. 2018)

By integrating and utilizing behavioral change techniques, such as goal setting, progress tracking, and performance feedback, these digital tools can improve people's daily choices, promoting a healthier life. Such approaches can be effective for individuals with chronic diseases or those at risk. For example, older adults are at a higher risk of developing conditions such as heart diseases, stroke, and diabetes, as demonstrated by a study conducted by researchers from the University of Kentucky. (Bruno C., et al 2022; Faiola A., et al 2019)

Health apps integrated with wearable devices also enable self-monitoring and self-diagnosis independently of medical and healthcare services (e.g., medical consultations, specialist visits, routine tests).

The development of new materials for wearable systems that use skin-contact biosensors is pushing the Self-Care field toward new frontiers, allowing for noninvasive extraction of biofluids for real-time and continuous monitoring of one's physiological state. Recent advancements in material science are making wearable or implantable systems increasingly lightweight and adaptable, enabling precise, non-invasive, and long-term monitoring of biological signals from the skin and internal organs. Research also highlights that the pervasiveness of wireless technologies allows remote monitoring of individuals who may have limited access to care services while simultaneously enabling continuous self-monitoring of their health status. (Salim, A., & Lim, S. 2019; Han, W. B., et al 2021)

Self-monitoring aspects characterizing these technologies can lead to improved quality of life through timely diagnosis followed by early treatment.

Some studies also emphasize how AI can facilitate self-diagnosis processes, providing users with an effective and reliable basic diagnosis. These systems can assess user needs through profiling, potentially indicating necessary and appropriate healthcare services and providing tailored doctor-patient interactions. Digital self-diagnosis tools can function as consultation platforms, AI-supported chatbots, or integrated wearable systems capable of tracking key vital signs and processing data to provide diagnoses and health status reports, directing users to the most suitable healthcare professionals for confirming the proposed diagnosis.

(Baldauf, M., et al 2020)

The analysis of scientific literature also found that the use of digital technologies can promote **self-management** of chronic and long-term illnesses. Self-management refers to patients' ability to manage medications and treatments related to their illness, as well as manage behavioral and emotional responses arising from their clinical condition to achieve a satisfactory quality of life. Strategies such as serious games enable individuals to engage in a continuous process of learning and awareness about their clinical condition through challenges and role-playing, promoting positive emotions, **virtuous behavioral practices**, and facilitating communication with individuals suffering from the same condition. (Araújo-Soares, V., et al 2018; Matamala-Gomez, M., et al 2020)

Self-Care processes also encompass practices for **improving mental well-being**.

Several studies note that in recent years, there has been an increase in mental health-related issues, especially due to the COVID-19 pandemic. The pandemic has placed significant strain on mental health services, with isolation, uncertainty, and loneliness faced by many individuals increasing the need for help and support, particularly for those who were already mentally vulnerable. Research shows that a key factor behind inappropriate diagnoses of mental health issues is limited access to specific services, starting from primary care, due to a shortage of mental health professionals and short consultation times. (Maulik, P. K., et al 2020)

An analysis conducted by researchers from the University of Cambridge and the Alan Turing Institute illustrates how the pandemic triggered the widespread use of online mental health platforms. Experiments based on web-based and digital tools for psychoeducation and support are proliferating to aid individuals with mental disorders, their families, and caregivers. (Inkster, B., et al 2020).

A pilot study conducted by the Mental Health and Addiction Division of Oslo University Hospital, in collaboration with the Clinical Institute at the University of Oslo Faculty of Medicine, tested the Norwegian version of the Relatives Education and Coping Toolkit (REACT), a program from the UK National Health Service that uses web platforms to provide support and psychoeducation to families of individuals with psychosis. The study evaluates how web-based support programs have the potential to increase access to standardized, high-quality

resources and concludes by demonstrating how the digital toolkit has stimulated empowerment and behavioral change processes in patients, fostering **patient empowerment** regarding healthcare professionals. (Romm, K. L., et al 2020; Lobban, F., et al 2011)

The several examples explored before highlight the meaning of Self-Care theme.

It primarily employs digital technologies for disease prevention, self-diagnosis through frequent monitoring, however, **self-care** extends beyond the clinical realm and encompasses tools apps, platforms and strategies aimed at promoting and maintaining **a healthy lifestyle, as well as fostering conscious and virtuous behaviors** also related to **mental health**.

3.3 Health booster technologies

In the last decade we have witnessed the rapid advancement of technology, which has strengthened the field of Mobile Health (mHealth). **Mobile applications** and other wireless technologies help individuals **monitor diseases, strengthen their relationship with healthcare providers**, and adopt preventive and informed behaviors. (Paglialonga, A., et al 2019)

Used for disease surveillance, support in healthcare, and monitoring of epidemic outbreaks, as demonstrated during the COVID-19 pandemic, mHealth can be a valuable tool to support integrated and patient-centered healthcare services.

In this regard, a comprehensive analysis was conducted on various mHealth tools implemented and evaluated in the Western Pacific Region (WPR) by the World Health Organization (WHO). The analysis identified and examined 39 case studies primarily from Australia, China, Malaysia, and New Zealand. The goal was to understand how mHealth tools effectively implemented care interventions. The tools included text messages, voice and video communications, apps, and mobile devices (point-of-care, GPS, and Bluetooth) on smartphones. The healthcare topics covered in the studies included medication adherence for cardiovascular diseases, heart failure, asthma, and diabetes, as well as lifestyle-related activities. It was observed that the mHealth tools analyzed in the 39 studies facilitated people's access to services, enhancing their usage, safety, and the quality-of-care simultaneously. (Godinho, M. A., et al 2020)

Technologies like mHealth have, to some extent, revolutionized the way people relate to space and time. Owning a smartphone that brings people closer and eliminates physical distances has certainly contributed to envisioning a paradigm of proximity-centered care, focused on individuals and their needs. Care is becoming an increasingly defining element of spaces and moments in life, easily accessible at one's fingertips and available on demand also at home. (Zao, J. K., et al 2008)

Indeed, the home, which has always been a privileged place for care, can incorporate therapies with digital technologies that allow monitoring through wearable devices and sensor integration into objects and spaces using **Internet of Things (IoT) systems**.

IoT is opening new possibilities to make care accessible to a wider population increasing sustainability potential and cost-effectiveness for the healthcare system (Kolodner et al., 2008)

Some research describes the term IoT as IoMT (Internet of Medical Things) to encompass the multitude of IoT solutions explicitly targeting the healthcare and wellness domain. (Adarsha, A. S., Reader, K., & Erban, S. 2019).

This innovation enables more accessible and secure care for individuals, optimizing both healthcare system costs and costs incurred by individuals involved in patient care (e.g., family members, caregivers, and the patient themselves). The primary solutions proposed for remote and accessible care are IoT systems based on digital platforms, often connected to wearable devices, allowing the collection and real-time transmission of data to healthcare providers without requiring any action from the patient.

An emerging trend is on-demand care, defined by Gleiss (2020) as the provision of **on-demand, patient-driven, immediate, and remote healthcare** services using digital technologies to maintain or restore physical, mental, or emotional well-being. The on-demand care is the second-fastest-growing segment in the on-demand economy. This model allows vulnerable and decentralized patients equal access to care and effective, functional assistance without the need for long trips to the hospital for medical check-ups. Simultaneously, it offers healthcare professionals and doctors the ability to remotely monitor patients, simplifying workflow and providing real-time awareness of the clinical situation.

The rapid spread of technologies as enhancers of care management highlights the issue of **equity**. The World Health Organization defines equity in care as **equal opportunities for individuals** to benefit from knowledge and practices related to the development and use of digital technologies to improve health.

A study conducted by researchers from the Finnish Institute for Health and Welfare in collaboration with Aalto University and Helsinki University, has shed light on how the pandemic has clearly brought to the forefront the impact of social and cultural inequalities, as well as linguistic, economic, and educational barriers, on access to digital healthcare tools. (Kneale, D., & Bécares, L. 2021).

The theme of equity, in its complexity, involves all stakeholders in the field of healthcare and encompasses aspects closely tied to emotions, trust, and privacy, often challenging to measure solely through quantitative analysis. (Kozelka, E. E., et al 2021)

It is likely that in the near future, mHealth and IoT technologies will transform disease-centered services into person-centered services, promoting an on-demand and ubiquitous care paradigm posing extraordinary possibilities but contemporary challenges likewise, accessibility and equity.

4. Discussion: Design spaces in the emerged themes

The three paradigms extensively inquired on in this paper present design challenges, which are increasingly relevant for shaping shared pathways towards fair, accessible, and inclusive digital care.

Firstly, the Distributed Care paradigm is responding to the problems of the twenty-first century by utilizing digital technology and care givers. An ageing population and rural depopulation in Europe have created a demand for digital care givers who improve patient care, increase access, and encourage digital literacy. Community-centered care promotes patient involvement and builds trust in digital technology. Many projects, such as the Care 4.0 project, aim to empower individuals and communities by providing personalized, preventive digital health care. Vulnerable groups benefit from community-mediated care, and social media platforms, particularly in mental health and prenatal care, are proving useful for emotional support. Through digital means and its applications, people are beginning to take an active role in both the care process and the development of new services, collaboratively generating care that is more person-centered and distributed within the community, emphasizing the role of digital caregivers and technology to enhance the patient-caregiver experience and healthcare outcomes.

From a design perspective, this paradigm could be facilitated by careful consideration of the different nature of (potentially) deliverable care interventions meaning **to co-design collaborative services and platforms** to empower all care supply chain's actors. For instance, tools to be used as medium between the health professionals and the community that support the patient through all the disease journey from the diagnosis till the management of it.

On the other side, the topic of distributed care imposes the demand of new (digital) skills. In this regard the big design challenge but also opportunity will be to design new **inclusive capacity building actions** to decrease the digital divide among different categories of users but also to support the communities' certification in their support function, as intermediates between patients and healthcare professionals (doctors, psychotherapists, hospital facilities, alternative care venues, etc.).

Secondly, Self-Care, as advocated by the World Health Organization, covers holistic well-being beyond traditional medical approaches. Digital technologies play a strategic role in disease prevention, self-diagnosis, and chronic illness management, providing personalized guidance and early detection. Research suggests a move toward hybrid care systems based on a combination of traditional primary care models with mobile apps and wearables, promoting options for integrating digital transition into mental health. On one hand, wearable devices and AI-driven self-diagnosis tools offer non-invasive, real-time monitoring and effective consultations, particularly benefiting those with limited access to healthcare.

On the other hand, in the realm of mental health, the COVID-19 pandemic has accelerated the adoption of telemedicine, providing scalable and cost-effective support through web-based platforms. There has been an increase in the use of more advanced technologies such

as virtual reality, along with online tools and platforms, to empower individuals with mental disorders and their families, filling gaps in mental health services.

The integration of digital technologies into community-based interventions enhances communication and collaboration, making self-care a personal and community-mediated approach to holistic health and well-being in the digital age.

In this regard there are **several design spaces to navigate** in such as the development of apps for digital coaching, e-mental health technologies, and digital mental fitness services to ensure a continuous dialogue with the professional that won't be replaced by the digital tool. Such apps will enable mediation and anonymity and provide services to reduce anxiety and stress, which are growing consequences of chronobiological and performance disorders.

Moreover, with its **patient-centred approach** design can make the difference in designing new integrated wearables with provisional machine learning able to activate a long-lasting behavioral change through gamification strategies based on users' profiles, needs, motivation, and emotions.

Thirdly, Mobile health (mHealth) has improved significantly, allowing people to monitor ailments, strengthen healthcare ties, and engage in preventive behaviors. As witnessed during the COVID-19 pandemic, mHealth plays an important role in patient-centered care, enabling access to healthcare services and enhancing care quality.

With wearable gadgets and real-time data transmission, digital technologies, notably IoT systems, transform the house into a care hub. On-demand care, a rapidly growing category, offers remote healthcare services that benefit both patients and healthcare professionals by simplifying patient monitoring and increasing clinical awareness.

The role of design intervention can be relevant in shaping future directions. Indeed, we can **envision new home care and care delivery** contemporary by transforming the house in a home therapeutic terminal equipped with new technologies: to monitor, manage therapies, and connect the patient to the healthcare service network. The rooms could be equipped with integrated sensors and will become therapeutic environments capable of treating and providing care themselves. This to ensure both an **inclusive and affordable care**.

However, together with its positive side, mHealth brings new challenges related to validation, actual quality, and therapeutic effectiveness on a large scale. It also raises concerns about healthcare inequalities. Hence, there is a suggested need for greater collaboration among researchers, physicians, developers, industries, and users in **co-designing and implementing technologies**, aiming to address the unanswered questions, ensuring that mHealth is a legitimately endorsed support for care.

Furthermore, the pandemic underscored how social, cultural, linguistic, economic, and educational disparities affect access to digital healthcare tools. Initiatives tailored to their needs can mitigate these disparities and promote equitable care processes, as well as a multifocal approach can help develop insights into how these groups might interpret and incorporate digital tools into their care. **Participatory design and co-design approaches** can also help

highlight the contextual dimension of care, recognizing the social and structural barriers that may hinder the use of digital tools as genuine enhancers of health and care processes.

Finally, since the on-demand care phenomenon affects the waiting factor, which is crucial for patient and other stakeholders' well-being, various challenges arise concerning regulation, expectations, and patient rights. Healthcare service providers will need to fully understand this change to respond adequately, such as through increased coordination among stakeholders, along with the implementation of so-called digital and social drivers (infrastructure, literacy, and skills).

5. Conclusions

In the last 10 years, the care concept has expanded from specific diseases and conditions to prevention and overall well-being, blurring the boundaries between medical, general and wellness devices (Kale et al., 2016)

Care is influencing everyday behaviors, and consequently, digital technology is more frequently serving as an enhancer of both individual health and relationships with others, from family members to healthcare professionals.

To navigate into this complex panorama, authors developed a scoping review aimed at answering the following research questions: “What will be the main driving forces for Digital Care?” “What will be the main directions defining digital care in 5 years?”

Once the analysis results were exhaustively explored, the authors tried to answer the question “How can design discipline shape the emerged future directions”?

Design plays a pivotal role in facilitating paradigm shifts; above all, it **can anticipate** by giving **shape to possible futures**, understanding the ethical and sustainable implications of digital technologies and the opportunities they might open in a specific field of application.

For instance, the growing demand for digital skills and capacity building offers designers an opportunity to address the digital divide among various user groups.

Moreover, design can mitigate healthcare inequalities, especially related to social, cultural, linguistic, economic, and educational disparities. Initiatives tailored to the needs of diverse groups can promote equitable care.

About the main directions in the near future, authors identified them into three paradigms: Distributed Care, Self-Care, and Health Booster Technologies by considering the role of design in shaping these emerging directions, stressing both challenges and opportunities.

Precisely, Distributed Care leverages digital technology and caregivers to address twenty-first-century healthcare issues, emphasizing community-centered approaches and the empowerment of individuals and communities. Self-Care promotes holistic well-being through digital tools for disease prevention and management, especially in mental health. Mobile Health facilitates patient-centered care through remote services and IoT systems, transforming homes into therapeutic hubs.

The growth of on-demand care raises issues related to regulation, expectations, and patient rights. Design can assist healthcare service providers adapt to these changes by creating meaningful interfaces, improving coordination among stakeholders, and addressing infrastructure, literacy, and skills.

Summarizing, the role of design in the future of digital care is multifaceted and may be considered essential for shaping the direction of healthcare.

Designers bear the responsibility to create **inclusive, user-friendly, and effective digital tools and services that empower individuals**, bridge gaps, and enhance the **overall quality of care** in a rapidly evolving healthcare landscape.

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