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Digital Minimalism: Using Technology for Efficient Healthcare

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ABSTRACT

This review article explores the concept of digital minimalism as a strategy for optimizing the use of technology in healthcare. While digital technologies offer numerous benefits, including improved patient-centered care and streamlined operations, challenges like information overload, clinician burnout, and the digital divide highlight the need for a mindful approach. Digital minimalism advocates for thoughtful and intentional use of technology, focusing on reducing clutter, optimizing usage, and prioritizing purposeful engagement.

The article examines how digital minimalism can address information overload and the increasing burden of administrative tasks, thereby mitigating burnout among healthcare professionals. It explores strategies for implementing digital minimalism in primary care settings, including utilizing artificial intelligence and machine learning tools, optimizing workflows, and promoting digital literacy.

The article explores practical strategies to integrate digital minimalism into primary care and discusses future directions, including ethical alignment of digital tools, fostering equitable access, and improving usability through user-centered design. By prioritizing workflow optimization and minimizing administrative burdens, digital minimalism aims to create a sustainable healthcare environment that enhances clinician well-being and patient-centered care.

Keywords: digital health, health technology, primary health care

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Introduction

The increasing integration of digital technologies in primary care offers numerous benefits, including improved patient-centered care and streamlined operations (1). Health information technology has been demonstrated to enhance the quality of care by improving adherence to medical guidelines, improving the monitoring of diseases, and reducing errors in medication administration. It has also shown potential in improving the quality and efficiency of healthcare services (2). However, challenges such as technology overload, potential burnout among healthcare providers, and the digital divide emphasize the need for a digital minimalism approach.

Digital minimalism, a term introduced by Cal Newport, encourages the thoughtful use of digital technology to enhance its benefits and reduce its negative impacts by advocating that clutter undermines efficiency, optimization is crucial, and purposeful engagement yields satisfaction (3). Newport believes this approach is essential for diminishing the unsettling, constant presence of digital devices in our lives and addressing related issues in professional environments. In healthcare, adopting digital minimalism could help identify the root causes of burnout among professionals and suggest possible remedies (4). This philosophy, which advocates the conscious use of technology, is compatible with the efficiency principle, which is avoiding waste, including waste of equipment, supplies, ideas, and energy, of the six goals for improving healthcare services (safety, effectiveness, patient-centeredness, timeliness, efficiency, and equity) outlined by the Institute of Medicine (5). This article aims to explore how digital minimalism can be applied in healthcare to address challenges like information overload, clinician burnout, and the digital divide. It examines why digital minimalism is necessary, who can benefit (healthcare providers and patients), and how it can be implemented through strategies such as workflow optimization and Artificial Intelligence (AI) integration.

Why is Digital Minimalism Necessary in Healthcare?

Information Overload

The rapid advancement of technology has resulted in an overwhelming amount of health information available online (2). Healthcare professionals should find reliable sources and evidence-based guidelines to access this information. This can be challenging, as it requires time and critical appraisal skills. The study, which surveyed family medicine residents, highlighted the complexities and challenges associated with polypharmacy in the elderly and emphasized the underuse of international potentially inappropriate medication guidelines due to resource abundance and time constraints (6). A survey study conducted on 6375 physicians across all specialties in the United States highlights the potential downsides of a digital-heavy healthcare environment. The findings suggest that implementing these digital tools creates more administrative tasks, leading to less time for direct patient care and decreased physician satisfaction. The study suggests that a more mindful approach to technology integration in healthcare is necessary to ensure that digital tools enhance, rather than detract from, the well-being of both physicians and patients (7).

Workload and Burnout

Prolonged stress can lead to physician burnout, a condition characterized by depersonalization, emotional exhaustion, and a loss of feelings of accomplishment (8). The pervasive use of digital tools in healthcare, including electronic health records (EHRs), patient portals, and clinical decision support systems, has significantly transformed clinical workflows. The high frequency of interaction with digital tools, combined with their often-suboptimal design, has created an additional burden for physicians, further complicating clinical workflows and contributing to job dissatisfaction (9). The COVID-19 pandemic has led to a shift in healthcare delivery, with social distancing measures prohibiting gatherings and medical societies canceling conferences. This has resulted in a significant increase in virtual meetings, webinars, and podcasts,

contributing to an overload of digital interactions and potentially leading to "digital burnout" (10). A study conducted on a total of 326 physicians showed that while physicians initially found online webinars a satisfactory replacement for in-person medical education during the COVID-19 pandemic, they ultimately felt overwhelmed by the number and frequency of these webinars and preferred them to be a complement to, rather than a replacement of, traditional learning (11).

As a result of technological advancement in primary healthcare, EHRs have replaced traditional paper-based systems, offering a digital platform for storing and accessing patient information (12). However, these tools often increase physicians' workloads, leading to inefficiencies and added stress. Integrating such technologies frequently requires more time for documentation and administrative tasks, detracting from patient care, the necessity for after-hours work because of the rise in telemedicine usage, and increasing cognitive and physical demands on clinicians (4,13-17). These issues, collectively known as "technostress," highlight how poorly optimized digital systems can exacerbate burnout (18). A 2017 survey of Rhode Island physicians highlighted a high level of Health Information Technology (HIT)-induced stress, particularly from using the EHR systems, with about 70% of EHR-using respondents, mostly in primary care, experiencing stress that correlates with burnout (19).

Digital Divide

While digital minimalism has the potential to improve primary care, it is important to consider the digital divide that exists among different populations. This is not only about not having access to the necessary technology and infrastructure but also not having the skills to use them (20). This can create inequalities in access to health services and outcomes if not addressed appropriately. The World Health Organization (WHO) 2023 report “Digital Health in the European Region” highlights the risk of a growing digital health divide in Europe, where uneven access to and adoption of digital health technologies prevents millions from benefiting from these advancements, particularly vulnerable groups like older persons and rural communities who stand to gain the most (21). The study, conducted on a random sample of 225 older adults, highlights the digital health divide among older adults, differences in technology use and self-efficacy in computer use. Findings highlight the digital health divide among older adults. Adoption of Health Technology among older adults aimed at closing the digital health gap (22). Digital minimalism aims to ensure that all individuals are ready to benefit from technological innovations that can improve health and quality of life.

Implementing Digital Minimalism in Healthcare

Reduction of Digital Clutter

Healthcare professionals need to prioritize mindful and intentional technology use to avoid information overload and burnout. To maximize the benefits of digital technologies in medical education, a hybrid approach that prioritizes quality over quantity combats digital burnout, establishes clear guidelines, and leverages technology's unique capabilities is crucial (11).

Addressing burnout caused by the digital environment requires targeted interventions to optimize technology, redesign workflows, and expand support systems. Successful strategies include improving the usability of EHRs through customization and iterative enhancements, providing thorough and timely training for new digital tools, and redistributing administrative tasks to team members such as medical scribes. These measures can alleviate the documentation burden on physicians, freeing up more time for direct patient care. Additionally, quality improvement initiatives that focus on process efficiency and task delegation have proven effective in reducing stress and enhancing job satisfaction. By integrating these approaches, healthcare organizations can create a more balanced and manageable digital environment for clinicians (9).

Artificial Intelligence (AI) and Machine Learning (ML) have pivotal roles in optimizing the use of digital health technologies. Through Natural Language Processing (NLP) and AI-driven analytics, diagnostic

accuracy is enhanced, patient care is tailored, and administrative tasks are streamlined. AI and ML may enable a data-driven approach to health care, ensuring that digital tools are used to their utmost potential, thereby reducing inefficiencies (19,23). Adopting AI-aided tools can streamline the process of accessing relevant information, minimizing time spent sifting through multiple sources and promoting efficient decision-making for rational drug use (24).

AI has the potential to streamline healthcare by reducing inefficiencies and enhancing decision-making, but its implementation must be approached cautiously to avoid unintended consequences. Beyond clinical algorithms, AI can also impact access to technology, patient trust, and self-care agency, as highlighted in a systematic review by Dr. Alexander d'Elia and colleagues. Their analysis of 86 studies emphasized the risks associated with the digital divide and the importance of equitable AI implementation. Achieving this requires community participation and a holistic perspective that considers systemic effects beyond primary care settings (20). By addressing these challenges intentionally, AI can be harnessed as a tool to reduce disparities and optimize care delivery without contributing to new barriers (25).

Optimization of Use

At both the individual and organizational levels, the strategic optimization of digital technology usage is paramount for enhancing operational efficiency and patient care within the healthcare sector. Physicians are encouraged to reassess their workflows and establish clear boundaries to ensure technology serves as an aid rather than a distraction. This involves a conscientious redistribution of electronic tasks amongst team members to enable healthcare professionals to dedicate more attention to critical aspects of their role, including diagnosis, treatment, and fostering patient relationships (4). By setting boundaries, such as designated technology-free time, they can maintain a healthy balance between digital and personal life. By setting boundaries, such as designated technology-free time, they can maintain a healthy balance between digital and personal life.

While technological advancements are crucial to efficient healthcare delivery, by integrating natural elements such as light, greenery, and natural materials, healthcare environments can be more conducive to healing and reduce stress and anxiety for both patients and staff. Recognizing humans' innate connection with nature, the biophilic design approach to the design of healthcare spaces recognizes that healing depends not only on technological interventions but also on the creation of supportive and restorative environments that meet individuals' emotional and psychological needs. It's about optimizing our relationship with technology to maximize our connection to the things that really matter; This includes our connection to nature and to each other. If we organize our digital lives, we must also create space for the restorative power of nature and real human interaction in healthcare settings (26).

Intentional Use of Technology

The widespread adoption of EHRs has been linked to physician burnout, primarily due to the time-consuming documentation and administrative tasks they require, their often-poor design, and the excessive amount of alerts and notifications they generate (27-30). Encouraging a mindset of using technology purposefully can help ensure it serves to improve patient care without overwhelming clinicians. Continuing education in digital literacy and the latest technological advances can help healthcare professionals use the digital environment effectively.

A survey study of UK GPs (general practitioners) found a moderate level of adoption of e-mental health interventions for depression, with 72% of respondents reporting use. However, the study also revealed that 92% of GPs had not received e-mental health training, suggesting a need for further research into the development and implementation of effective training programs. The study's finding that 92% of GPs prefer guided interventions over unguided interventions provides valuable insights for future development of e-mental health interventions (31). The findings advocate for healthcare organizations to employ systematic, evidence-based interventions, like targeted EHR training, to mitigate HIT-related stress and reduce physician burnout, while suggesting broader

system changes for long-term relief (19).

Moreover, while machine learning on big data holds immense promise, we must be wary of potential overdiagnosis, as highlighted by studies indicating that the pursuit of precision medicine may inadvertently lead to the identification and treatment of conditions that wouldn't cause actual harm. Balancing the benefits of big data with responsible implementation, long-term prognostic studies, and a nuanced understanding of risk is crucial to avoiding unnecessary interventions and ensuring patient well-being (32). Intentional use of technology in primary care, focusing on meaningful and patient-centered applications, can help maximize these benefits while minimizing unintended consequences, fostering a more efficient and equitable healthcare system.

Moreover, privacy and security of patient data remain paramount concerns, necessitating the careful selection of technologies and adherence to stringent privacy regulations (33). Digital minimalism promotes intentional and purpose-driven technology use, offering a valuable framework for safeguarding data privacy. In today's landscape, many digital tools and applications collect health-related data without adequate regulation, heightening privacy risks for users. Digital minimalism encourages individuals to choose trustworthy platforms, avoid unnecessary data sharing, and carefully manage app permissions. Additionally, transparent data policies and ethical data practices play a critical role in mitigating these risks. By adopting such measures, individuals can engage with technology in a safer and more meaningful way (34).

Future Directions

Digital minimalism in primary healthcare must extend beyond implementing new technologies to focus on optimizing workflows, providing targeted training, and fostering team collaboration. Future strategies should address specific challenges, such as practice environments and regulatory pressures. Additionally, the ethical alignment of digital tools with clinicians' values and incorporating intrinsic motivational factors, such as autonomy and goal-based decision-making, are vital. Standardized methods to measure documentation burden and holistic frameworks for evaluating clinician workload and well-being are needed to guide effective interventions. Emerging technologies, including voice-to-text systems, natural language processing, and machine learning, offer significant potential to streamline workflows and enhance clinician-patient interactions (9,35). By minimizing time spent on documentation, healthcare professionals can focus more on direct patient care, leading to improved efficiency and doctor and patient satisfaction (4). Furthermore, incorporating biophilic design principles in primary healthcare environments —such as integrating natural light, greenery, and restorative spaces — can reduce stress, enhance well-being, and complement digital strategies in creating supportive and balanced healthcare settings. Robust data privacy measures must also be integrated into all digital solutions to protect patient information and maintain trust in healthcare systems. Finally, AI solutions must prioritize equitable access, community engagement, and tailored support for underserved populations, ensuring that technology advances do not exacerbate the digital divide but instead promote inclusivity and resilience. Continuous attention and adaptation are required to address these, and other emerging challenges as primary care continues to evolve in the digital age (Table 1).

In conclusion, as advocated by digital minimalism, the intentional, optimized, and streamlined use of technology in primary care holds numerous benefits. Improved communication and coordination emerge as significant advantages, with efficient use of EHRs and secure messaging platforms enhancing the quality of patient care, reducing medical errors, and elevating patient satisfaction. By focusing on essential digital tools, primary care providers can navigate the complexities of modern healthcare more effectively, ensuring that technology acts as an enabler rather than a barrier.

Table 1. Practical strategies for implementing digital minimalism in primary care

Strategy	Key Focus	Implementation Examples
Reduction of Digital Clutter	Streamline digital workflows and minimize unnecessary digital interactions.	- Customize EHR interfaces for relevant data. - Use AI-driven analytics to filter and prioritize critical information.
Workflow Optimization	Improve efficiency and reduce technostress by redesigning workflows and redistributing tasks.	- Employ medical scribes for documentation tasks. - Introduce team-based care models to balance administrative and clinical responsibilities.
Intentional Technology Use	Improve efficiency and reduce technostress by redesigning workflows and redistributing tasks.	- Introduce team-based care models to balance administrative and clinical responsibilities.
Addressing the Digital Divide	Ensure equitable access and usability of digital health technologies across diverse populations.	- Provide community training programs for underserved populations. - Develop multilingual and user-friendly digital health platforms.
Enhancing Data Privacy	Safeguard patient information and build trust through robust privacy measures.	- Apply stringent encryption and data protection protocols. - Conduct regular audits and ensure compliance with privacy regulations.
Incorporating Biophilic Design	Design healthcare environments that integrate natural elements to reduce stress and enhance well-being.	- Use natural light, greenery, and restorative spaces in healthcare facilities. - Incorporate calming design principles in virtual care settings.

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