Commentary

Digital healthcare: the new frontier of holistic and efficient care

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INTRODUCTION

The landscape of healthcare is rapidly evolving, driven by cutting-edge technological advancements that aim to improve patient outcomes, increase efficiency, and reduce costs. This commentary will discuss five points to consider in digital healthcare: healthcare in augmented reality (AR) and the metaverse, digital therapeutics, holistic healthcare, interoperability, and artificial intelligence (AI) for healthcare workers.

HEALTHCARE IN AR AND THE METAVERSE

AR and metaverse technologies are increasingly being utilized in healthcare to address chronic pain and offer immersive experiences for patient education, training, and treatment [1]. With AR, patients can visualize their conditions, enabling them to better understand their symptoms and the effects of treatments. For instance, AR-based therapy can help chronic pain patients gain control over their pain perception and improve their quality of life [2]. The metaverse, on the other hand, provides a virtual environment where patients can undergo therapy and rehabilitation sessions, participate in support groups, and interact with healthcare providers in a more engaging and accessible way [3].

DIGITAL THERAPEUTICS

The increasing use of smartphones, wearables, and other connected devices has resulted in a new modality of treatment—digital therapeutics [4,5]. These solutions use evidence-based software programs to deliver personalized, clinically-supported interventions to patients, often without the need for in-person consultations. One notable example is EndeavorRx (Akili Interactive Labs), a video game-based therapy for children with attention deficit hyperactivity disorder (ADHD) approved by the US Food and Drug Administration (FDA) [6]. Digital therapeutics can complement or even replace traditional treatment methods, offering new possibilities for remote care and patient monitoring [7,8].

HOLISTIC HEALTHCARE

Holistic healthcare, or whole-person health, shifts the focus from isolated diagnosis and treatment to a comprehensive approach that encompasses the entire cycle of care [9]. Companies like Omada Health emphasize prevention, early intervention, and long-term support to help pa-

tients manage chronic conditions more effectively [10]. This approach recognizes that health is multifaceted, and factors such as mental, emotional, and social well-being must be addressed to achieve lasting improvements. Using technology, healthcare providers can track patient progress, offer tailored interventions, and maintain ongoing communication to ensure optimal outcomes.

INTEROPERABILITY

Interoperability is the seamless exchange of information across healthcare systems and platforms. It aims to reduce redundancy, streamline care coordination, and empower patients to make informed decisions [11]. In Korea, the government-initiated "My Healthway" project is a notable example of efforts to improve interoperability [12]. This platform consolidates patient health information and shares it with consumers and healthcare providers upon receipt of consent, leading to more personalized and efficient care. This approach mirrors the financial "MiData" service [13], which has been successful in revolutionizing the banking industry.

AI FOR HEALTHCARE WORKERS

AI is also transforming the healthcare sector by providing valuable support to medical professionals. From automating patient surveys to generating voice-activated medical records, AI-powered tools are enhancing efficiency and reducing administrative burdens. One such success story is Nuance DAX (Nuance), which can generate accurate medical records by listening to conversations between patients and physicians [14]. Also, AI-assisted radiograph readings and other diagnostic tools are becoming more commonplace, allowing healthcare workers to make better decisions and focus on delivering high-quality care. In Korea, the Naver Corporation provides services for healthcare workers, such as Smart Survey, which facilitates previsit questionnaires and automatically records them to the electronic medical records. Also, the same company's patient summary solution reduces clinician burden by automatically suggesting appropriate messages to be sent out to patients based on results of a medical checkup.

CONCLUSION

The era of large language models and digital innovation offers numerous possibilities for both patients and healthcare professionals [15]. By embracing new technologies, the healthcare industry can provide more effective, personalized, and holistic care, ultimately leading to improved patient outcomes and a better overall experience for all.

ETHICS STATEMENTS

Not applicable.

CONFLICT OF INTEREST

Dongchul Cha works for Naver Corporation (Seongnam, Korea). No other potential conflict of interest relevant to this article was reported.

FUNDING

None.

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