Digitalization and Healthcare Quality

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ARTICLE INFO	ABSTRACT
	The advent of digitalization in healthcare represents a significant boon for the advancement of healthcare provision. Within this paradigm, the enhancement of healthcare quality through digital transformation emerges as a pivotal process. This study undertakes a comprehensive analysis, elucidating opportunities and reflections on the digital metamorphosis of healthcare quality. Central to this transformation is the utilization of cutting-edge technologies such as artificial intelligence (AI), machine learning (ML), cloud computing, and data analytics. These digital tools serve to optimize healthcare processes, engendering models of care that are not only data-informed but also attuned to the individualized needs of patients. The integration of digital technologies with healthcare quality yields novel prospects, empowering healthcare providers to deliver personalized care, reduce operational costs, and augment treatment efficacy. However, amidst this technological epoch, formidable challenges persist. Predominant among these challenges are issues relating to standardization, infrastructural inadequacies, privacy apprehensions, technology assimilation complexities, and a dearth of data literacy. Additionally, the scarcity of proficient personnel and the financial exigencies associated with digital technology implementation further compound these challenges. Despite these impediments, the transformative potential of digitalization in healthcare quality remains unequivocal. It is imperative to address these challenges through strategic interventions, fostering interdisciplinary collaborations and investing in infrastructure and workforce development initiatives. By surmounting these obstacles, healthcare facilities can unlock the full potential of digitalization to revolutionize healthcare quality on a global scale. **Keywords:** Digitalization, digital technologies, health care, healthcare quality

INTRODUCTION

Digitalization has revolutionized many aspects of life. One such important aspect is "Health". Digitalization of healthcare has moved the paradigm of quality healthcare. It has allowed people to lead a healthy and quality life. The concept of digital health has been adopted by a variety of organizations and a combined approach is followed to make continuum of care more comprehensive. Further, the pandemic accelerated the digital transformation in healthcare. For example, according to the study conducted by SSCG Media Group, in March 2020, 53% of the healthcare practitioners were using telemedicine owing to the restrictions due to pandemic. Also, according to a report of Precedence research, medical app downloads increased by 50% between 2019 and 2020, owing to increased demand for COVID-tracing and healthcare apps.

Digital transformation in healthcare quality aims to improve patient care, reduce costs, and improve the efficiency of healthcare delivery. Additionally, digitalization can enhance patient engagement, provide access to better-coordinated and more efficient care. It can also improve health outcomes for patients, reduce administrative costs, and provide clinicians with better access to data and insights. Examples of digitalization in healthcare quality include telemedicine, e-health records, web and mobile apps, AI technologies, wearable devices, automated healthcare workflows, predictive analytics, and digital patient engagement. In 2020, 62 million telehealth visits were recorded. According to Chouaibi et al. (2022) technology has empowered patients even in remote areas to access quality health services. Increasing use of smart phones, improved internet connectivity with the introduction of 4G/ 5G, advancement in healthcare IT infrastructure, rising prevalence of chronic and lifestyle related disorders and the accessibility to virtual care has fuelled the

growth of digital health. Furthermore, the focus is slowly shifting to improve patient experience and provide more personalized care. For instance, in July 2021, Teladoc Health collaborated with Microsoft Teams environment to improve clinician and patient access across the virtual healthcare space.

Government initiatives throughout the globe to digitalize healthcare are further adding to this transformation. For instance, during the 2022 budget session, the Government of India introduced a digital health ecosystem under Ayushman Bharat Digital Health Mission (ABDM).

Similarly, in October 2021, France government announced that they will invest over USD 650 million to expand their digital health infrastructure on a national level.

By realizing the opportunities digital health contains, more and more companies, governments, clinicians, patients and all the beneficiaries are starting to invest in it. It bridges the gap in patient to doctor ratio. However, there are still certain barriers which need to be addressed in order to revolutionize digital health like never before.

METHOD

This research is designed on the basis of Literature Review, which is a depiction of the hypothesis, discoveries and other research materials got from references to be utilized as the reason for research exercises. A literature review includes a critical evaluation of the available resources on the topic discussed. It provides an overview of existing knowledge, in order to identify relevant theories, methods and gaps in the available research. Theoretical foundations, theoretical reviews, and literature reviews are some of the ways to conduct a literature review. Methods of searching of articles was through research journal databases and searching through the internet. The database search used was Google Scholar. For article searches, the keywords used were: Digitalization; Healthcare quality; Digital transformation; Digital technologies. The following procedures are used in this research: (1) Development of topic to identify the main concepts or keywords to be used in your research; (2) Collecting and organizing the literature to be reviewed. The literature reviewed is in accordance with the problem. The stages in organizing the literature are searching for objectives, general objectives, and ends from the writing by perusing the theoretical, a few early on passages, and conclusions, as well as grouping the literature based on certain categories; (3) Synthesizing and uniting the results of the organization of the literature into a synopsis with the goal that it turns into a brought together entire, by searching for linkages between literary works and (4) Recognizing the content to be discussed or analyzed in order to curate the research.

RESULT AND DISCUSSION

In the ever-evolving era of technology, healthcare quality embraced technology like never before. Digitalization offers services that can directly answer the needs of the patients, clinicians, administrators because they are restricted by their daily tasks. The results to questions presented in this research are as follows:

Benefits offered by digitalization in improving healthcare quality: The advantages bestowed by digitalization upon healthcare quality are multifaceted and profound. Firstly, it elevates the precision and expeditiousness of patient care processes, thereby optimizing clinical outcomes. Secondly, it enhances access to healthcare services, particularly for remote and marginalized populations, fostering inclusivity within healthcare delivery systems. Thirdly, digitalization contributes to heightened patient safety standards through mechanisms such as automated error detection and prevention. Moreover, it engenders cost efficiencies through automation, thereby mitigating financial burdens on healthcare organizations and patients alike.

Concurrently, advanced healthcare innovations empower patients and consumers to efficaciously manage and monitor their well-being and health-related activities. Telehealth and home care services, buttressed by Medical Internet of Things (IoT) based home ICU/Remote monitoring devices, hold promise in mitigating healthcare infrastructure inadequacies. According to the e-health network (29 November, 2021), these fully functional, management-by-exception platforms are envisaged to significantly alleviate pressure on tertiary and quaternary care centers, enabling a more focused approach towards acute and post-acute care cases.

Furthermore, the implementation of electronic Health Records (eHR) and Personal Health Records (PHR) has ushered in tangible enhancements in patient care quality while facilitating the creation of accurate and accessible data. Notably, they have also contributed to the promotion of a sustainable environment. Additionally, ePharmacy and point-of-care diagnostics services have enhanced medication accessibility and diagnostic efficacy, consequently reducing turnaround times and associated costs.

Artificial intelligence (AI) emerges as a transformative catalyst in revolutionizing healthcare quality. It is leveraged to augment medical decision-making, facilitate early disease detection, enhance diagnostic accuracy, optimize patient management, and heighten patient satisfaction levels. Furthermore, AI streamlines administrative workflows, fortifies data privacy management, reduces paperwork burdens, and fosters enhanced patient engagement. According to a Forbes report, software solutions such as ChatGPT hold the potential to substantially alleviate clinician workload, particularly in paperwork-intensive tasks.

In addition to the present benefits, future interventions in digitalization hold promise for further enhancing healthcare quality. Prospective interventions encompass the advancement of predictive analytics and machine learning algorithms to enable proactive healthcare interventions. Furthermore, the integration of blockchain technology is poised to fortify data security and interoperability within healthcare ecosystems, while wearable devices and IoT sensors are envisioned to empower patients with real-time health monitoring capabilities. Additionally, the convergence of virtual reality (VR) and augmented reality (AR) technologies holds potential for enhancing medical education, training, and surgical interventions. Lastly, the advent of precision medicine, fueled by advances in genomics and personalized healthcare, is poised to revolutionize treatment paradigms by tailoring therapies to individual genetic profiles and physiological characteristics.

Hence, the manifold advantages offered by digitalization in healthcare underscore its pivotal role in catalyzing transformative improvements within healthcare delivery systems. Through continuous innovation and strategic implementation, digitalization stands poised to revolutionize healthcare quality while ushering in an era of enhanced efficiency, accessibility, and patient-centered care.

Digitalization and patient care: In the contemporary digital landscape, patients have exhibited a heightened inclination towards preventive healthcare and demonstrate an increased interest in accessing and managing their medical information. This paradigm shift has catalyzed direct care interaction between patients and healthcare providers, facilitated by digital access and monitoring technologies, thereby fostering a more comprehensive approach to patient care and ultimately augmenting patient satisfaction levels.

Moreover, a pivotal epoch in modern healthcare is characterized by the ethos of patient-centered care. As elucidated by the International Alliance of Patients' Organizations, patient-centered healthcare epitomizes a paradigm wherein the healthcare system is intricately designed and delivered to address the individual healthcare needs and preferences of patients. Central to this paradigm is the ethos of appropriateness and cost-effectiveness in healthcare delivery, wherein greater emphasis is placed on promoting patient responsibility and facilitating optimal utilization of healthcare services. This patient-centered approach not only engenders improved health outcomes and enhanced quality of life but also ensures optimal value for healthcare investment, thereby underlining its transformative potential within the healthcare ecosystem

Challenges of digitalization in healthcare quality: The endeavor of this paper extends beyond the mere elucidation of the benefits of digitalization in healthcare; it seeks to illuminate the myriad challenges inherent in this transformative journey. Indeed, leveraging the full potential of digitized healthcare is akin to navigating a rugged terrain replete with numerous stumbling blocks. Foremost among these challenges lie issues pertaining to standardization, infrastructure inadequacies, privacy apprehensions, and a dearth of data literacy. Moreover, there exists a pressing need to address challenges associated with the availability of skilled personnel and the financial exigencies accompanying the implementation of digital technologies.

In addition, the management of patient data privacy and security presents formidable challenges, with concerns ranging from the potential for data breaches to the heightened risk of cyber attacks. Furthermore, healthcare providers grapple with the imperative to keep pace with the rapid technological advancements, thereby necessitating continuous upskilling and adaptation. Notably, there is an imperative to enhance the usability of digital tools such as patient portals, as well as to streamline the integration of new technologies into existing healthcare systems.

In summary, the journey towards digitalization in healthcare quality is fraught with complexities and obstacles. Effectively addressing these challenges necessitates a concerted effort from stakeholders across the healthcare ecosystem, encompassing policymakers, healthcare providers, technology vendors, and patients alike. Only through strategic interventions and collaborative endeavors can the full potential of digitalization in healthcare quality be realized, thereby ushering in a future characterized by enhanced efficiency, accessibility, and patient-centered care.

CONCLUSION

Digital transformation in healthcare quality is likely to become more prominent over the next few years. This is due to a variety of factors, such as increased access to data, advances in artificial intelligence, and the introduction of new regulations, such as the Health Insurance Portability and Accountability Act (HIPAA). With these advances, healthcare organizations are better equipped to provide high-quality care, while reducing costs and improving efficiency. Digital transformation is also enabling healthcare organizations to leverage predictive analytics and machine learning to develop better risk-assessment models, provide personalized care, and improve patient engagement. In short, digital transformation is revolutionizing healthcare quality by helping healthcare organizations deliver better care and improved patient outcomes though there are numerous hurdles to cross and a lot of knowledge to gain.

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