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Digital Technologies in Health Care: A Comprehensive Review of Current Status and Future Perspectives

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ABSTRACT
The review paper focuses on the most important digital technologies that are used in health care, as well as the difficulties, advantages, and prospective prospects for the future that are linked with the inclusion of digital tools into clinical learning. Within the context of this rapidly evolving digital age, it is of the highest significance for students, medical educators, and training organizations to keep their understanding of the breadth, promise, difficulties, and limitations of digital technologies up to date. Digital health studies aim to realize the promise of digital technologies and understand their feasibility and effects. Through a critical examination of the most famous interdisciplinary digital health publications, this study argues that the digital health field has not really engaged with its main topic, technology. The intricacies of healthcare environments, including different technologies, existing procedures, and people, are ignored in research on digital technologies. The study findings show that health literature focuses on digital technology processing and its effects on digital health research approaches that emphasize technology and context. It claims that digital health's full potential requires multidisciplinary research on healthcare systems, informational demands, and digital technology.

INTRODUCTION

The field of digital health tools has seen significant development since its first introduction in the year 2001. Digital health tools refer to a diverse array of technologies, such as mobile apps, health information technology, smart wearable devices, remote monitoring systems, health platforms, telehealth, and telemedicine. Recent data indicates a consistent upward trend in the quantity of these instruments. Currently, over 318,000 health apps are accessible in the App Store, and more than 200 new applications are launched every day. Due to technology advancements and the COVID-19 epidemic, education across all sectors has shifted in recent years from a conventional core approach to one that mostly uses digital methods. (Park and Chung, et al., 2021) The ancient Greeks first introduced the discipline of observation and thinking about illnesses as part of their approach to logical inquiry, which is when clinical learning first emerged. Reasonable interpretations and conversations resulted in instruction and the establishment of schools like the one at Cos, where the Greek physician Hippocrates is credited with creating the oath and teaching in the fifth century BC. Clinical" relates to patient inspection and treatment, while "learning" is the process of acquiring information or abilities by instruction, study, or experience. The training of health professionals necessitates experience in a clinical setting; there is no substitute for this kind of learning, nor is it comparable to the learning that results from handling patients in actual clinical settings. (Park and Chung, 2021) With the introduction and usage of digital technologies in routine clinical practice, clinical learning and, therefore, patient care have grown simpler. Due to its ability to enable patient engagement in the healthcare delivery process, digital health can contribute to innovation in the field of medicine Lyawa et al., (2016). When they are no longer in a condition of well-being, the patient might recover from his poor health. The patient is granted the opportunity to take part in the decision-making process when it comes to their medical care. Making informed decisions about their health requires the patient to conduct online searches or use digital health applications (such as those on their phone). In comparison to other industries like media, banking, insurance, and retail, the healthcare sector has the lowest degree of digital innovation, which limits the rise of labor productivity Gopal et al., (2019). In this piece, we want to change this perception, optimize patient outcomes and service costs, and support the rise of digitalization as a driver of health innovation. However, in order to accomplish this innovation, systemic adjustments must be made to the infrastructure, personnel training, and healthcare budgets.

Using knowledge and abilities to provide patient care is a key component of clinical learning. It entails taking part in supervised learning sessions in medical settings, which support students in putting what they have learned in the classroom into reality. It may happen in a variety of contexts related to the health sector under the guidance of knowledgeable instructors and practitioners who securely support students' development of thinking skills

and clinical abilities. Information and communication technology advancements are transforming medicine, and it seems that the existing classroom approach is not adequately educating students for this future. These days, technology is all around us, and a lot of people and businesses have adapted to it for everyday use. Significant technical developments have occurred worldwide since the start of the twenty-first century. The creation of digital technologies that will improve educational teaching and learning processes has been made possible by the rise of cell phones, the Internet, computers, social media, and webpages. These days, more digital technologies are being used in education, and they are the most crucial resources for instructors and students to develop their creative, collaborative, and communicative abilities. Hund et al., 2021). In order to provide recommendations on the use of digital tools for both students and medical educators, this study aims to review the various digital tools for clinical learning, their benefits, particularly in light of the COVID-19 pandemic, the challenges associated with their use, and their prospects. Online instructional resources are available for every kind of instruction to meet the requirements and skills of various age groups. These solutions address a wide variety of topics, including managing schedules and adhering to work hours, as well as collaborating with coworkers and using video classes. Digital health tools have been utilized across various healthcare services, encompassing the promotion of healthy behaviors (e.g., smoking cessation, healthy eating, and physical activity), enhancement of health outcomes in individuals with chronic conditions like cardiovascular disease, diabetes, and mental health disorders, as well as facilitating remote access to treatments (e.g., computerized cognitive behavioral therapy for mental health and somatic issues. These technologies may assist in the prevention of diseases, early detection, and the treatment of chronic disorders. Digital health technologies not only provide healthcare practitioners with a comprehensive understanding of patient health by providing access to pertinent data but also empower people to have more autonomy over their health, allowing them to make more educated choices. (Shaikh et al., 2017)

METHODOLOGY

The aim of this review is to provide a thorough examination of digital tools utilized in clinical education, especially amidst a shift from traditional methods to digital platforms. With the increasing severity of the coronavirus pandemic in 2019, there has been an accelerated push towards adopting digitalized solutions in clinical learning. This paper delves into key digital technologies employed in healthcare education, addressing challenges, benefits, and future prospects associated with their integration into clinical training.

RESULTS AND DISCUSSION

Electronic Resources for Clinical Education

Information and communications technology-enabled instruction and learning, both within and outside of the classroom, are referred to as digital learning. The newest approach in teaching and evaluation methodologies is the use of digital resources. (Park and Chung, 2021). Google Forms for gathering student responses, zoom video conferencing, YouTube live streaming, Google Art and Culture (an online art museum), and Choose Your Adventures (a storytelling approach) are some of the digital technologies that have been brought to the medical and dentistry education fields. Programs, websites, and other online resources that facilitate work completion are known as digital tools. Web browsers that do not need downloading allow users to access a plethora of digital resources from any place. Digital resources, including webpages, applications, and their expansions, provide engaging opportunities for digital learning. Igbonagwam et al., 2021). With the use of digital technologies, text, photos, music, and video may all be integrated to create an immersive experience. Digital learning instruments often used in classrooms, such as tablets, Airtame (for wireless presentations), and Chromebooks, allow students to engage in interactive and exploratory digital learning. (Niebuhr et al., 2014). The COVID-19 pandemic has brought about significant changes in the field of education, necessitating the transition of several institutions, universities, schools, training centers, and tutors from in-person instruction to online platforms. Although several universities and public educational facilities are now resuming operations, hybrid methods of instruction are expected to persist for an extended period. The efficacy of this paradigm

Here are a few examples of digital tools:

Zoom

While the COVID-19 outbreak was going on, the Zoom platform became more popular. When it comes to video contacting family members, Zoom is not only useful, but it also acts as an invaluable tool for virtual classrooms and departmental meetings. This commonly used video conferencing technology allows for more than one hundred individuals to participate in a lecture. It makes it possible to create several breakout rooms, share screens, and engage in group chats for more intimate interactions during the presentation. The ability to record lectures and share meetings with coworkers who were unable to attend is one of the many benefits offered by this technology. Comes from the user's text. Numerous people and both public and private organizations use Zoom, including banks, colleges, healthcare organizations, government institutions, and schools. It is also used for events like bar and bat mitzvah services, burial services, and birthday celebrations. Zoom and Formula One partnered in 2020 to establish a virtual club where fans could experience behind-the-scenes access and virtual activities via Zoom, starting with the Hungarian Grand Prix. A July 2020 San Francisco Chronicle story mentioned a recent real estate development in Oakland and San Francisco, where some properties had "Zoom rooms" with backgrounds for Zoom calls. Account users were given the option to regulate meetings and eliminate unwelcome attendees,

as well as create passwords for all meetings. Finally, end-to-end encryption was identified as a critical feature. This ensures that any exchange of information among the users and other participants in the conversation or sessions is only available to these parties. (Zoom Video Communications Inc. (2016). Archibald et al. (2019) highlighted that in addition to the benefits of VoIP technologies described, such as Zoom and, in contrast to face-to-face interviews, the outcome of these experiences is reliant on the researcher's subjective judgments of the reliability of the information gathered during interviews collected.

Google Classroom

A single location for all organizations' administrative, documentation, reporting, and training requirements is provided by the Google Classroom learning management system software, which also offers the resources to organize instruction, conduct online classes, and generate assignments. To facilitate the smooth administration and delivery of virtual instruction, Google Classroom combines all of the regular G Suite applications, including Docs, Sheets, and Hangouts. Since its introduction ten years ago, the powerful Google Classroom has expanded into an even more feature-rich platform. It is now more user-friendly than ever and has contributed to the adoption of the digital classroom in classrooms throughout the globe. More resources than ever are available in the system, including a plethora of free technologies that may be used to support teaching both within and outside of the classroom. Most importantly, it enables students to use their gadgets wherever they are to work. However, it also provides instructors with a reliable workspace from which to assign and grade work that is turned in digitally. This unique event in education prompted school officials to plan for pupils' continuous learning. Online Distance Learning (ODL) is one of the most popular learning modalities among the country's Higher Education Institutions (HEI). Students in this learning environment access their lessons via the Internet and technology tools (Huang, 2019; Usher & Barak, 2020).

The Term "Computer-Assisted Learning" Refers To Computer-Aided Training

This way of learning offers the benefit of being able to visualize complicated operations with ease; nevertheless, its main advantage could be its exceptional accessibility. Clinical education, which was previously limited to the school setting and particularly practice rooms, can now be conducted at home, on the go, and most importantly, repeatedly at the pace of learning until the students are completely familiar with the corresponding material thanks to the widespread use of the Internet and various electronic devices. Australian medical school students received computer-aided instruction in pharmacology practice courses from Wang, who also administered a standardized questionnaire to the students to gauge their level of learning. Of the students in their research, 98.7% effectively attained their learning objectives and had a favorable outcome. This approach has some drawbacks since the material

shown on certain displays may not be enough to take the place of in-person instruction and hands-on training. (Shaikh, et al., 2017).

Tools for Digital Health in Cardiovascular Health

As with other healthcare services, using digital health solutions has promise for enhancing patients' cardiovascular health results.8. The leading cause of death worldwide is cardiovascular diseases (CVD), which include a broad range of medical conditions such as ischemic heart disease, cerebrovascular disease, hypertensive heart disease, peripheral vascular disease, rheumatic heart disease, cardiomyopathies, and arrhythmias. The Global Burden of Disease Report indicates that the prevalence of CVD is rising everywhere. An estimated 523 million instances of CVD and 18.6 million deaths worldwide were attributed to the disease in 2019. In addition to treating biological risk factors, the foundation of effective CVD treatment and prevention is addressing modifiable behavioral risk factors via the promotion of a healthy lifestyle and adherence to recommended medication (Georgeff, (2014). However, owing to practical, logistical, budgetary, and geographic challenges, providing comprehensive risk factor management to various populations has proved to be difficult9. Digital health tool applications in CVD health may assist medical practitioners in reaching a larger population more effectively and efficiently. There are several possible uses for these instruments in CVD health. To enhance CVD health outcomes, for instance, digital health apps that focus on behavioral changes, including quitting smoking, increasing physical activity, encouraging healthy diets, and improving medication adherence, are used8, 9. Additionally, smartwatches may aid in the detection of arrhythmias and provide continuous rhythm monitoring. Another example of a CVD health monitoring application is an inflatable blood pressure cuff that is linked to a phone app. Through record-keeping and automated reminders, mobile apps may help CVD patients manage their health problems and increase their health literacy. (Santo, & Redfern, 2020).

The ability of digital health technologies to improve the state of cardiovascular health

There has not been much data on how well digital health tools work to improve specific health outcomes despite the rapid growth of these tools and patients' growing interest in health applications. As a result, it is crucial to monitor and assess these instruments carefully and methodically. The evaluation of the efficacy of digital health tools has generally been impeded by the fast evolution of digital product creation, which necessitates that these tools continually adapt to the ever-changing trends. Therefore, long-term effectiveness studies may lose their relevance in bolstering present judgments of these instruments. Furthermore, studies discovered that a lot of mobile health apps are created with little regard for theoretical frameworks that can direct behavioral changes. The lack of standards for data collection across health apps and the lack of healthcare regulation for these applications are other reasons for the dearth of evidence on the efficacy of health applications in improving health outcomes. The World Health Organization (WHO)

emphasized in its 2020–2025 global strategy on digital health the need to create metrics for tracking and assessing the efficacy of digital health tools and strategies.

Governments and funders have recently imposed stricter limits on digital health innovations, requesting a more thorough assessment of the efficacy and quality of these interventions. Overall, there is a growing body of research supporting the use of mobile applications to improve CVD outcomes, although it is still rather small. The data is inconsistent, with some studies recommending the use of these apps while others indicate detrimental effects. In 2018, a review was carried out to assess the efficacy of health applications in the management and control of cardiovascular disease. The review revealed that all the reviewed studies had low quality of evidence, which could be attributed to factors such as small sample sizes, short study durations, or a limited number of randomized controlled trials. (Marion & Fixson, 2021). These assessments did, however, point out a few possible advantages of using these apps to enhance cardiovascular health32. The advantages of using health apps to improve cardiovascular health have not been supported by more recent RCTs that were released after 2017 and have shown contradictory outcomes. Similarly, contradictory results were also reported in another analysis conducted by Choi (2020) to evaluate the efficacy of mobile apps in improving health outcomes in patients with hypertension and cardiovascular issues. It is imperative to get a more profound comprehension of how to effectively design quality improvement to satisfy the demands of patients and their clinical teams, given the significant lag between the creation of new healthcare technology and their incorporation into clinical practice. We now need to address this gap and develop long-term measures to close it, thanks to the COVID-19 pandemic. On the one hand, it has made it possible for telehealth to be implemented quickly. (Bhavnani, 2020).

The Efficacy of Digital Health Products Across Various Demographic Segments

The promise of digital health tools to lessen healthcare inequalities across racial and ethnic minority groups has resulted in a significant increase in interest in these technologies. However, data on the use and efficacy of adopting these digital health technologies across various demographic groups is required in order to address these inequalities in health. Several obstacles have been found in several studies to prevent vulnerable populations from adopting and using these technologies. Demographic groupings, including displaced people and members of racial and ethnic minorities. A few of these obstacles include low computer literacy and knowledge, lack of cultural relevance, complex educational or instructional materials and technology content, restricted access to computers and other technologies, and a lack of perceived benefits from digital health tools. Furthermore, research has shown that the cultural and environmental elements that affect patients' health might affect how successful these tools are. The research does not provide strong information about cultural variations in people's perceptions and uses of these

digital health tools. The literature now in existence has a mostly Western perspective on the use of these instruments, hence exposing a significant constraint. Given that the majority of cardiovascular disease (CVD) outcomes contain both biological and behavioral risk factors, the cultural environment is especially significant. Numerous social and cultural variables, including perceptions of illness risks, interactions with and faith in the healthcare system, social support, etc., may have an impact on the latter. (Krishnan et al., 2019) For example, research evaluating the use of digital health technologies for cardiovascular health across various demographic groups found that blood pressure (BP) monitoring was superior in enhancing BP results for black patients compared to White patients. According to previous research, white people's medication adherence was shown to be better when using digital tools than it was for other ethnic groups. Digital health data may be stored and analyzed more quickly. This is particularly useful for constructing analytical models for safety improvement, clinical risk management, and raising the caliber of healthcare organizations using a data-driven approach. (Digital health technologies were effectively deployed during the COVID-19 pandemic to support contact tracking, isolation management, primary care improvement, and citizen-decision-maker engagement. (Cascini et al.,2021).

Techniques for Assessing the Efficacy of Digital Health Instruments

Worldwide, a variety of research designs have been used to assess the efficacy of these technologies. Only a small number of the research used qualitative designs, with the bulk using quantitative techniques, including pilot studies and RCTs35. RCTs are the gold standard for clinical assessments, but there has been much debate about whether or not they should be used to evaluate digital health tools1, 50. RCTs often follow predetermined guidelines and strict standards, which might sometimes make it more difficult to find broader implementation problems in "real-world" applications. Because of the rapid advancements in technology and the practice of iterative upgrading, randomized controlled trials (RCTs) are deemed impractical. RCTs often force the inventor to halt their creative process, which leads to the reporting of a solution that is many cycles behind. Research designs that foster creativity are likely to provide more relevant results but at the cost of a study's lack of control. Furthermore, technological factors continue to dominate the assessment of digital health solutions, with little attention paid to the requirements and expectations of end users. As a result, there is a deficiency in the literature that clearly explains the difficulties and problems people have while using digital health tools. As was previously mentioned, the cultural settings and traits of the targeted groups are only two of the patient-related obstacles that may prevent these tools from being used widely. Healthcare providers may now better manage patients' health and well-being and enhance their systems and services thanks to the development of digital technology (Della Mea, 2001; Maramba et al., 2019).

Being Attentive to the Situation in Order to Predict or Foresee Something

Being mindful of the context in order to predict unwanted repercussions of the digital realm. Digital technology has the potential to enhance the quality of healthcare and promote fairness in access to healthcare services. Nevertheless, the attainment of superior quality via digital technology necessitates the integration and rationalization of current systems and processes. Digital technology may further exacerbate existing imbalances by introducing an additional layer regarding the issue of digital injustice. The access, ownership, development, and use of digital technologies are influenced by specific social, political, and economic dynamics, which may result in digital inequalities manifesting in diverse situations. The digital health studies examined in this analysis mostly focused on assessing the practicality of technologies in controlled environments. This study does not explore the potential for the digital realm to have many outcomes, including negative ones, that differ from the intentions of the creators. To get comprehensive knowledge, it is necessary to do research that specifically investigates the effects of digital technology in various settings and from several viewpoints, including healthcare professionals, patients, and health administrators. Expanding our comprehension of digital technologies within a specific context can only be achieved via the use of data that is directly related to that context. While 25% of the articles in Digital Health use qualitative approaches that are effective in capturing the context, none of the publications in the Lancet utilize qualitative methods. The foundations of all the studies in the Lancet are based on decontextualized data. We propose to promote research that goes beyond mere trials, calculations, reviews, and polls and instead incorporates the relevant context using proper methodologies. Internet-linked ICT for health goes by many different names and has many nuances: wearable health, telehealth or telemedicine, smart health, connected health, eHealth, mHealth or mobile health, online health, P4 medicine, health IT, health innovation, healthy social media, health or bio- or med-tech, health 2.0 or 3.0, and so on (Taylor et al., 2020). This phenomenon is referred to in this article as "digital health," with a purposeful focus on the ways in which these technologies allow patients, customers, or consumers to actively participate in clinical treatment and health research.

Artificial Intelligence (AI)

AI, or artificial intelligence, is the use of computers to mimic the cognitive processes of the human brain. This includes gathering information, using that information, drawing interpretations or conclusions, and learning from past experiences. In their publication, Mak and Pichika (2019) define AI as the use of technological tools to replicate human behavior. The sub-fields of artificial intelligence (AI) include machine learning (ML) and deep learning (DL), which use statistical approaches for learning (Mak & Pichika, 2019). AI technique has been used in several domains of healthcare, including surgery, imaging, illness diagnosis, and therapy. It has the potential to serve as an

additional tool for improving personalized medicine. Artificial intelligence (AI) has the potential to be used in several aspects of clinical trial processes, such as designing trials, identifying suitable patients, and monitoring the progress of the trials (Jang, 2019). Here are a few notable contemporary uses of artificial intelligence: (1) In a study conducted by Lin et al. (2019), AI technology was compared to provider assessment to assess the effectiveness of AI in diagnosing and making treatment decisions for children with cataracts. (2) Roggeveen et al. (2019) are planning to conduct a superiority trial to compare the use of an AI system for antibiotic dosing with standard dosing in critically ill septic patients. (3) Wijnberge et al. (2020) conducted a test to compare the use of an AI application with standard protocols in reducing intraoperative hypotension.

Blockchain Technology

Blockchain technology, first linked to digital currencies such as Bitcoin, employs a distributed, peer-to-peer computer network that allows databases to securely store encrypted information and documents with timestamps. Every server, also known as a "node," in the network carries out the processing and authentication of each data input. It then stores all transactions, together with the whole history of every other transaction ever recorded on the network. This procedure results in the creation of a secure and unchangeable "chain" of content "blocks." Researchers are now investigating how this technology might be used in the health sciences to tackle prevalent issues related to data integrity and security. In a comprehensive analysis conducted in 2018, Mayer and his colleagues examined more than 300 studies on the application of blockchain technology in healthcare. They suggest that transitioning electronic health records (EHRs) from separate systems to a blockchain network could enhance the efficiency and security of health information sharing. This, in turn, would facilitate improved collaborative clinical decision-making and grant patients greater control over their privacy (Mayer et al., 2018). Blockchain is being explored as a potential platform for managing clinical trial data due to similar factors. According to Osipenko (2019), data governance is a method of controlling data to avoid unauthorized changes. The author suggests that it provides a technological solution that might enhance transparency, security, quality, and efficiency in clinical trials. Prior studies have explored the possibility of utilizing this technology to enhance various aspects of clinical trials, including the reporting of adverse events, management of trial data, determination of endpoints, compliance with reporting regulations, and sharing of data (Benchoufi & Ravaud, 2017; Maslove et al., 2018; Wong et al., 2019; Zhuang et al., 2018).

Utilizing Digital Technologies in the Midst of an Epidemic of Disease

At the time of completing this research, the COVID-19 pandemic has significantly accelerated the use of telehealth and other digital technologies (Keesara et al., 2020). Restrictions on in-person health care have compelled practitioners to surmount obstacles in using technology (Winstanley et al., 2020) and explore innovative digital tools (Iyengar et al., 2020). The current crisis has also caused significant disruptions to the operations of clinical trials both in the

United States and elsewhere. Many investigators and sponsors have temporarily halted activities or modified them to use digital technologies for recruiting or conducting research processes wherever feasible (Noonan & Simmons, 2020). The FDA and the EMA have both provided recommendations suggesting the use of alternate methods, such as remote and virtual tools, instead of in-person visits. This is to ensure the safety of participants and to reduce potential threats to the integrity of the study (U.S. FDA, 2020; EMA, 2020). Noonan and Simmons (2020) contend that the utilization of digital tools has the potential to be expanded in order to sustain research activities throughout the ongoing crisis. Furthermore, the authors suggest that researchers should contemplate the perpetuation of these tools and methodologies even after constraints on trials are abolished.

Artificial intelligence methods are presently being used to quickly select compounds that show the highest potential for the development of drugs and vaccines for COVID-19. Within a short period, a team of engineers and physicists from across the world, using powerful computers, examined 1 billion potential compounds and identified the 30 most favorable ones for potential medication development (University of Texas at Austin, 2020). The current public health emergency has highlighted the potential benefits of using digital technology in both clinical studies and everyday life.

Artificial intelligence (AI) advantages for the healthcare industry

Advantages of Artificial Intelligence in the Healthcare Industry Artificial intelligence (AI) is now undergoing rigorous testing in hospitals for medication development, diagnosis, and predicting symptoms. Here are a few of its more encouraging potential opportunities:

Diagnostic Evaluation

AI is capable of analyzing vast amounts of data from radiography, CT scans, magnetic resonance imaging, and electronic health records (EHRs). AI systems may help with early symptom forecasting by evaluating patient data, seeing patterns, and establishing connections.

Virtual health assistants

Virtual health assistants are responsible for doing various tasks, such as responding to regular patient phone calls and emails, overseeing medical records, protecting confidential patient information, arranging doctor visits, and reminding patients to arrange follow-up appointments. Due to its ability to provide patients with a customized approach to managing their health and addressing their inquiries, this AI application is considered one of the most advantageous in the field of healthcare.

Management of Uncommon Illnesses

BERG, an AI-based clinical-stage biotech platform, seeks to map illnesses to expedite the discovery and development of novel drugs and vaccines and transform the delivery of healthcare. Research and development (R&D) and

interrogative biology are combined to help medical practitioners generate long-lasting products for patients with uncommon disorders.

Specific Therapy

Using technologies like deep learning and AI, Benevolent AI, a well-known clinical-stage AI-enabled drug development company, was able to provide the right therapy to the appropriate patients at the right time, resulting in individualized treatment of patients with useful insights. The company's current priorities include obtaining licenses for its drugs and creating portable treatments for unusual illnesses.

Medication Innovation

Neural networks are used by artificial intelligence to assess the qualities and bioactivity of potential drugs. Researchers may identify the best treatment targets to look into for certain illnesses with the help of AI systems. As a consequence, the healthcare industry has seen a rise in pace and a drop in funding for drug research. Inclined trials have been shown to be crucial in identifying the right individuals. (Muhammad & Mukhtar, 2023).

Prospects for the Future (AI) in Health Care

AI may have a huge influence on the healthcare solutions that will be available in the future. As the most essential capability that enables the development of precision medicine, which is universally acknowledged to be a very significant step forward in the area of healthcare, it is the capacity that is most crucial. Machine learning is one application of artificial intelligence that may be implemented. Despite the fact that early efforts to give ideas for diagnosis and treatment have proved to be difficult, it is believed that artificial intelligence will ultimately become competent in that domain as well. Because of the rapid advancements that are being made in artificial intelligence for imaging analysis, it is feasible that a computer may soon analyze the majority of radiology and pathology images. Speech and text recognition may become more frequently employed in the future for a range of applications, including the transcription of clinical notes and contact with patients. The primary obstacle that artificial intelligence encounters in several sectors of the healthcare business is not determining the level of sophistication required for usefulness but rather guaranteeing its acceptance in routine clinical practice. AI systems must obtain approval from regulatory bodies, integrate with EHR systems, adhere to standardized protocols to ensure consistent functionality among similar products, be trained for use by clinicians, receive payment from public or private payer organizations, and undergo continuous improvement in the field. Widespread adoption will only occur at that time.

These hurdles will eventually be surmounted, but doing so will require a far greater amount of time and effort than the time and effort required for technical advancement to happen. Consequently, there is an anticipated increase in the use of AI in clinical practice during the next five years, and this usage is expected to become much more prevalent in the next decade. Furthermore, it is becoming apparent that AI systems will not substantially

replace human doctors in the realm of patient care; instead, they will assist human clinicians. Over time, it is conceivable that human doctors may be drawn toward jobs and work setups that capitalize on distinct human abilities such as empathy, persuasion, and holistic thinking. (Gupta & Katarya, 2020). Artificial intelligence (AI) has the potential to aid in the rehabilitation of stroke patients by evaluating bio-signals, such as brain and muscle activity, as well as eye movement, in combination with ambient factors. Following a stroke, when there is a decline in motor abilities, these systems identify and redirect movement intentions. For example, suppose the patient loses the ability to lift his right arm. In that case, the artificial intelligence system may analyze brain activity and use this information to detect the problem and implement a solution using robotics. Stroke survivors will regain their motor functions at a faster rate, leading to a successful rehabilitation process. (Vyas, Gupta, & Yadav, 2019, February).

CONCLUSIONS AND RECOMMENDATIONS

In summary, the purpose of this study is to investigate the manner in which the present research in the field of digital health conceptualizes the characteristics of digital technology and the environment in which they are used. Reviewing the original research papers that were published in multidisciplinary digital health journals was done in order to provide an answer to this topic. The journals The Lancet Digital Health, Frontiers in Digital Health, and Digital Health were found to be outstanding examples of places to obtain cutting-edge research on digital health. The researchers assessed this. The research is, for the most part, divorced from the contexts of use, and the publications that have been published on digital health do not give the peculiarities of digital technologies the attention that they need. Both the data and the conversation make this very clear. It is hoped that the proposals presented here may assist in advancing research in the rapidly emerging area of digital health, both scientifically and socially. These suggestions were inspired by the lessons learned from thirty years of research on information systems that tried to address equivalent gaps in other domains. In order to make use of digital tools for health care, it is necessary to improve digital skill sets among both teachers and students, to provide an atmosphere that is favorable to learning, and to conduct frequent assessments to determine whether or not these technologies are suitable for successful teaching. If this line of action is taken, then both medical teachers and students will be better prepared to deal with the challenges that this digital age provides.

ADVANCED RESEARCH

The suggestions will direct the creation of solid, empirically supported solutions that include a customized and individualized approach to digital health tools. Digital health technologies are being used more quickly as a consequence of COVID-19, and much information has been gained about technology utilization. Many patients who were denied access to healthcare because of social alienation, program closures, and resource reallocation have

found solace in telemedicine and remote patient monitoring. Programs like cardiac rehabilitation, which were already underused before the pandemic, were severely affected, which led to a rise in the usage of home-based cardiac rehabilitation. Lessons learned include the fact that digital technology can be deployed securely and effectively and can enhance access. In the post-pandemic environment, hybrid models that combine center-based and home-based components supported by telemedicine and remote patient monitoring might end up being the norm for medical treatment. The application seeks to improve quality of life, encourage collaborative decision-making, and raise involvement. In order to do this, the present research study attempts to assess the Intelligent Health Solution's efficacy across a broad user base that includes people who have been relocated as well as people from a variety of racial and cultural backgrounds.

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