Artificial Intelligence in Healthcare, Revamping the Artificial Intelligence in Medical Sector

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Abstract- AI enabled cloud based for healthcare which is able to dissect and analyze data in real-time provides knowledge on how clinical operations, patient care and health outcomes are influencing each other. This skill would consequently support decision making by health sector and the allocation of resources based on the use of clinical information, epidemiological evidence and environmental factors. Problems and benefits come with genetics information, and wearable databases, and diagnostic imaging that stores large amount of data and Electronic Health Records (EHRs). AI-enabled healthcare cloud infrastructure with complex analysis utilizing a real-time data can be an exclusive way to achieve actionable insights, and to define such insights for further patient support and decision-making. Go ahead and look towards the findings of Rajkumar et al. (2019) about the importance of real-time evaluating for clinical decision support because it allows one to conduct risk evaluation, diagnosis and therapy optimization. The application of the machine learning in analyzing the medical images, with a view to identify the diseases at an early stage and detecting them is put forward by Esteva et al. (2019).

Indexed Terms- Healthcare Industry, Internet of Medical Things, Block chain Technology, Genomics and Precision Medicine, Artificial Intelligence.

I. INTRODUCTION

Artificial Intelligence (AI) becomes nowadays a fundamental factor taking part in healthcare revolution offering opportunity to perform an accurate diagnosis, treatment, and preventive actions. We focus on AI of the healthcare, growing, and AI should approach patients, whether in medicine fields.

AI applications have been fueling the healthcare industry into a new era as they are narrowing down the decision making process and thus are having quite a positive impact on the patients' outcomes. The capability of the machine learning algorithms to deal with large-sized data sets is largely important as it facilitates accurate finding and prediction of disease through medical imaging data. AI-embedded imaging systems by making the process of diagnosis and treatment planning in regards to cancer and heart diseases more precise.

Furthermore, the systems that possess the ability to identify decisions intelligently provide physician with clinical-evidence based and real-time data and guidance system powered by AI. Patient data enable PDMS to improve the disease course and, in addition, allow getting access to personalized/precision medicine. These individualized treatment schemes are developed individually per patient according to his progress, optimal resource utilization, and these are very advanced implements to improving the overall health outcomes and operational efficiency.

Intelligent technologies are the source of developments that are affecting clinical processes, healthcare administration, and patients' roles. Humanizing healthcare has been made possible by the used of virtual health companions, which is a tool for communication with patients in an environment that shows empathy and the ability to understand natural language. The individuals are able to access their health care services and the health literacy is also in place. Besides AI technology brand in health tracking, wearable sensors and remote scan devices lead to active management of personal health that is possible as chronic diseases prevention and early treatment.

The Artificial Intelligence in the medicine can have either a positive or negative impact. For the purpose to eliminate algorithm bias and data leakage 'Information technology' rules and guidelines have to be created and the standards must be based on ethical medical ones. The major limitation to the use of autonomy in the

labor force came from interface problems, operator training, and data consistency.

Illustratively, this work include activation of core area and provision of strategies for AI repair in health care based on the most up-to-date research results as the insightful direction to create processes for modifying AI systems practiced in a hospital setting. It will be the "AI Health Cloud", which is us and our advanced knowledge embedded in it, as well as a network that comes together and gradually organizes people, authorities, and healthcare system.

1.1. Literature Review

AI is a creative instrument known to solve enduring problems and dramatically change healthcare service delivery in the medical sphere. This book highlights the AI potential revolution of patient experience, medical judgment, and healthcare delivery systems by analyzing the recent research findings on the AI health applications.

There have been many studies done on the new AI-assisted diagnostic imaging tools coming into use which are recognized for producing superior results in patients and better diagnosis accuracy. In accordance with Esteva et al. (2019), deep learning algorithms can spot even tiny differences in the view of medical pictures interpretations, this can help with the early stage diagnosis for diseases such us cancer and cardiac issues. Rajkumar et al. (2019) advocate the use of machine learning in image analysis to increase accuracy in the diagnosis and betterment of the decision-making ability of clinicians.

First and foremost, AI-augmented intelligence helps doctors make decisions and provides information on personal care more quickly than doctors themselves could possibly do unassisted. The innovation capability of AI to improve the clinical trial process over the entire clinical trial life cycle, from clinical trial design to data processing, is demonstrated by Cruz Rivera et al. (2020). Sarabadhikari and Sarabadhikari (2019) suggest that AI can help resolve issues of Healthcare 4.0 like the decision making based on the big data and precision medicine.

The way patients and health care professionals communicate and the design of healthcare are both transforming due to AI technologies. Rajkumar et al. (2019) hold that virtual medical assistants enhance medical relationship of the physician and patient to the confidence that a patient has in their treatment. Real time patient health information is made available through wearable sensors an remote monitoring systems; early treatment is also enabled and recurrence is minimized.

In addition to the seeming numerous advantages of AI integration in healthcare, there are also dangers surrounding it, such as those concerning decision-making processes, data security, and algorithm skepticism. First of all, according to the purpose of the article, Cruz Rivera et al. (2020) basically highlight the role of rules and ethics in these issues. Interoperability and data standardization, along with the staffs' skills training, are considered as key challenges for AI introduction in healthcare systems.

To sum up, AI may be a great tool to improve a patient's outcome and to increase the effectiveness of the healthcare system. Realization of the entire ecstasy AI in healthcare and the fair share of profits mean that the ethical, regulatory, and technological factors should be carefully analysed. Overcoming this challenge will become an ongoing process involving the further examining of the obstacles and finding ways to mitigate them.

1.2. The Evolution of Healthcare Infrastructure: A Historical Perspective

The use of technology, changes in society and the increasing role of health quality in people's lives has been the main factors that influenced the growth of the healthcare system. Obtaining vision into the development of the modern health care services needs us appreciating this evolution. With the aid of data analysis, digitization, and technological advancements, the healthcare infrastructure has been noticeably changed in the twenty-first century.

AI is fundamentally changing medicine and has constantly been showing up as an asset of the healthcare infrastructure. Using AI systems can assist us in treatment planning and decision making as one can analyze a huge number of data to figure out the patterns and trends. Through the aid of AI-driven diagnostics systems, clinical decisions are based on

evidence and so, the quality of outcomes and patient safety is improved (Rajkomar et al., 2019).

The troubles of access and collaboration for usual health care are provided by digital health structures like telemedicine and mobilized health apps. Despite all the geographical barriers and hurdles, telemedicine technology provides the way around where teleconferencing or remote consultation helps to overcome all the barriers and allows access to healthcare services (Fagherazzi et al., 2020). People who use mobile health apps not only are able to track their chronic symptoms, conditions and get real-time health status updates, but they also can prevent the occurrence of deterioration and complications (Kvedar et al., 2014).

A digitalization in health system has been happening mostly to prove that it also can support people's well being long with the access of healthcare services especially now there is a pandemic. During the coronavirus pandemic crisis when there is need to manage the spike on the healthcare facilities and efficient use of resources, Telemedicine has become the key source of medical care in terms of social distancing and lockdowns (Hollander & Carr, 2020) Notwithstanding that, there are ethical issues around algorithm bias, data security and privacy which come along with it. This is quite a general phenomenon for AI, big data analytics, and digital healthcare integration. To clear these problems and to provide an ethical use of digital health technology in an understandable way, we need a regulatory framework and also some code of conduct (Obermeyer & Emanuel, 2016; Fagherazzi et al., 2020).

Finally, the AI, data analytics and digital healthcare combo itself constitutes of a major transformation in the healthcare system nowadays. The patients' well-being and community healthcare are boosted, partly by support of modern technics like this. But even to achieve this objective (i.e. the true capacity and the flexibility, universality and sustainability of healthcare systems all over the world) we must ensure that ethical issues are elevated through taking them into the account and applying them properly.

II. THE NEED FOR AI IN HEALTHCARE

The notion of healthcare incorporating artificial intelligence (AI) is growing extensively, making it mandatory to tackle the industry's multifarious issues. A study on AI's importance in healthcare has been done in the last couple of months, giving many reasons. For example, a recent work by Miller et al. stresses that AI technologies can optimize clinical decisions and patient care outcomes.

Artificial intelligence-assisted diagnostic equipment employed by machine learning algorithms makes highlighting and defining the diagnosis of cancer and cardiovascular disorders easy. Such digital solutions have, in some instances, reached extremely high reporting rates through the analysis of medical images. Additionally, AI is used in telemedicine and remote monitoring; the research by Hollander and Carr (2020) noted that AI has many benefits, such as remote diagnosis, training of medical staff, and promoting self-care. Help, virtual health personnel, and mobile health apps are quick tools people can use to empower and take control of their health.

Moreover, picking up high-risk populations, logically proclamating the disease situation, and cleverly using resources, prediction tools and health monitoring solutions combined with artificial intelligence created by healthcare companies help to strengthen the quality and cost of services. The COVID-19 pandemic has brought to light that AI solutions should be applied in healthcare immediately to diagnose/tackle all the new health risks and eliminate any disruption in the system. In the age of lockdowns and social distancing laws, AI-powered progress such as predictive analysis, connection tracking, and remote surveillance have been of great support in slowing the spread of the pandemic and ensuring the availability of treatment facilities (Kluge et al., 2020). In conclusion, the employment of AI in healthcare plays a vital role in addressing medical challenges, which include more precise diagnosis, contributing to clinicians' decision-making, which leads to the rising satisfaction of patients and improved community health. AI adopters in healthcare may find themselves ideally placed to spark a revolution in healthcare delivery and ultimately increase health outcomes for the people they serve through the skilful use of AI technologies.

From a macro point of view, in healthcare, the utilization of AI is a breakthrough of the industry in its developing needs as they may differ from the improvement of diagnosis precision and decision-making to the satisfaction of patients and the management of community health. With AI technologies in an implementable way, the healthcare industry can access tremendous chances to set up new approaches for better healthcare solutions that enable the mission of eradicating diseases, maintaining the status quo and reducing the inequalities in healthcare.

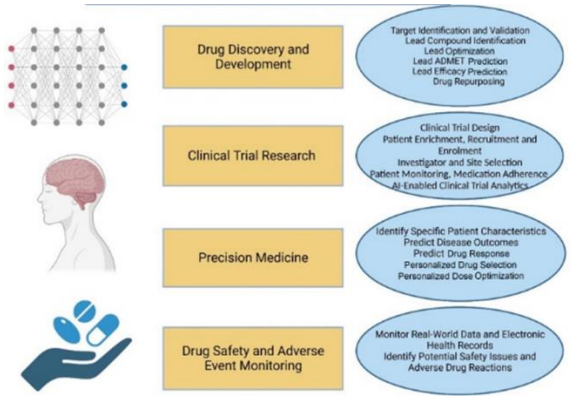

Figure 1: Artificial intelligence's use in precision medicine and pharmaceutical research. Precision medicine and drug discovery and development (including clinical trial phase, post-marketing surveillance, and discovery phase) have been transformed by artificial intelligence (AI) through the use of machine learning, deep learning (CNN), and natural language processing techniques. Convolutional neural networks, or CNNs.

III. COMPONENTS OF AI HEALTHCARE CLOUD INFRASTRUCTURE

3.1. Real-Time Data Analysis

AI enabled cloud based for healthcare which is able to dissect and analyze data in real-time provides knowledge on how clinical operations, patient care and health outcomes are influencing each other. This skill would consequently support decision making by health sector and the allocation of resources based on the use of clinical information, epidemiological evidence and environmental factors. Problems and benefits come with genetics information, and wearable databases, and diagnostic imaging that stores large amount of data and Electronic Health Records (EHRs). AI-enabled healthcare cloud infrastructure with complex analysis utilizing a real-time data can be an exclusive way to achieve actionable insights, and to define such insights for further patient support and decision-making. Go ahead and look towards the findings of Rajkumar et al. (2019) about the importance of real-time evaluating for clinical decision support because it allows one to conduct risk evaluation, diagnosis and therapy optimization. The application of the machine learning in analyzing the medical images, with a view to identify the diseases at an early stage and detecting them is put forward by Esteva et al. (2019).

Data-driven healthcare approaches that predictively analytical enable real-time treatment of healthcare issues without the delay that usually associated with paper-based systems. It also helps whereas it evaluates, detects and supports in population health management entitled like disparities detection, health trend analysis, and treatments guidance. To seize upon AI healthcare cloud technology completely we will have to come to a solution regarding data privacy, security as well as regulatory compliance issues. In order for AI-based healthcare applications to be successful, as per Miotto et al. (2016), there should be a standardization of data and data quality requirements. In order for AI technology in healthcare to achieve breakthrough innovative deliveries of healthcare and personalized treatment, it is crucial that this problem be first and foremost addressed as AI healthcare cloud architecture solutions for real-time data analysis need to be effectively launched and used.

Study Objective/ task	Algorithms	Other sensor	ECG Features
Cardiac diagnosis	SVM	No	Simplified mean stepping increment, sum of the distance from the major interbeat interval point, and the number of clusters in a Poincaré plot,

			cumulative voltage value, voltage deviation in the ST segment, and slope from the QRS onset to the offset.
Cardiac diagnosis	SVM	No	Presence of qR complex in leads I and aVL, QRS duration, QRS axis degree, presence of rS complex in leads II, III and aVF, R-peak time. Significance weight in brackets
Cardiac diagnosis	SVM	No	Cosine Stockwell transform features
Cardiac diagnosis	RNN, LSTM, GRU	No	Past RRI, next RRI, local average of the 5 past and the 5 next RRI, and average duration of the RRI in each person. And wavelet transformation features (not clear)
Cardiac diagnosis	Predefined rules	No	RRI, PR interval, QT interval, QRS duration
Cardiac diagnosis	DD-path	No	RRI, slope, amplitude, area, of the QRS complex
Cardiac diagnosis	Distance	No	RRI and 2 sets of complex features derived from QRS complex
Cardiac anomaly	SVM	No	Not clear
Cardiac anomaly	SVM	No	HR, duration of P wave, PR interval, QRS complex, and QT interval, and the shape (inverted or not, and peaked or not) of T wave.
Cardiac anomaly	Neuro-fuzzy	No	Digital wavelet transform decomposition features
Cardiac anomaly	Distance	No	RR interval (RRI)

Table 1. ECG characteristics fed to the algorithms for real-time analysis of data.

3.2 Seamless Communication and Collaboration AI integration with healthcare cloud infrastructure emphasizes how crucial teamwork and communication are to improving patient outcomes and healthcare delivery. According to Wang et al. (2018), interoperability is essential because it allows medical professionals to concurrently access and evaluate patient health data from several sources. Interoperability facilitates better communication between caregivers, improves the quality of decision-making, and raises patient safety.

Hence, cloud computing architecture applied to AI medicine enable teamwork and communication among the hospitals, research and pharmaceutical institutes as well as other organizations situated worldwide. The implementations of the teleconferencing and secure messaging are required most to the prompt decision-making at the care point as indicated by Ader-Milstein et al., 2017. The interaction systems that oversee common patterns of care for patients with challenging

conditions, transmission of information and alignment of treatment choices emphasize the human centered healthcare delivery model.

On the other hand, AI healthcare cloud architecture by making AI-based clinical decision support tools and predictive analysis models part of the system, AI healthcare cloud architecture enhance the smooth cooperative and communication. In our opinion, AI systems have to be smartly integrated into the healthcare system in such a way to help achieve the best treatment results and transfer the benefiting evidence in a timely fashion. Real time alerts regarding patient risk indicators on the behalf of AI enhanced diagnostic tools are now possible which ensure patient safety and quality of treatment by alerting the medical staff so that the coalition of risks associated with the wrong decisions during the emergency situations could be averted.

With the help of cloud-based healthcare solutions, patients too have a way to stay in touch and can be more active concerning their healthcare needs. Liao et al. (2019) have suggested that portals of patient and mobile health apps are able to foster functional patient-provider relations and shared medical decision-making. Through developing communication channels between patients and healthcare providers, natural disclosure of health information and the empowerment of patients with regards to their care, these technologies enhance adherence to therapy and the positive results of treatments.

Therefore, the healthcare community is advised to focus more on teamwork and communication in order to make the process of patient involvement and healthcare delivery more effective with the changing role of AI in cloud infrastructure. Facilitation of better decision making and enhanced patient safety are examples of the benefits of interoperability, secure communications and integrated AI platforms. As opposed to the previous situation, patients can independently monitor and manage their health conditions being in control of their care which involves patient portals and mobile health applications.

3.3 Scalability in Healthcare Services

The scalability of AI healthcare cloud infrastructure is crucial and helps to improve response to variable needs by providing efficient systems. Healthcare data grows on a large scale from sources such as electronic health records and medical imaging. Scalability is an important factor here to ensure process and storage. Al-Shamsi et al. (2019) underlined the importance of edge computing in the sense that it enables the application of data-intensive healthcare services and allows the processing of a large bulk of data.

Also, scalability enables quick application deployment of AI-based tools, making patient care delivery swifter. Tabor et al. (2017) draw our attention to the great importance of AI in the health industry as an accelerator for introducing AI technologies, a driver of innovation, and a general reform of care models. The dynamic resources can be scaled up in cloud-based platforms by healthcare providers to deploy AI tools for diagnosis purposes and analytics models for predicting patient behavior in time.

Another feature highly associated with scalability is interoperability among healthcare providers and partners, which is made possible by sharing information freely. According to Kuo et al. (2020), one of the most significant roles in AI-powered healthcare solutions is its contribution to creating interoperable systems where communication and exchange of information are possible and, in this way, facilitates the development of public-private partnerships. These cloud-based systems provide scalable APIs and data integration tools that link healthcare systems and devices to a single system to develop a standard view of patient health information. Since there is information sharing between the platforms, care coordination, communication, and patient engagement can be enhanced.

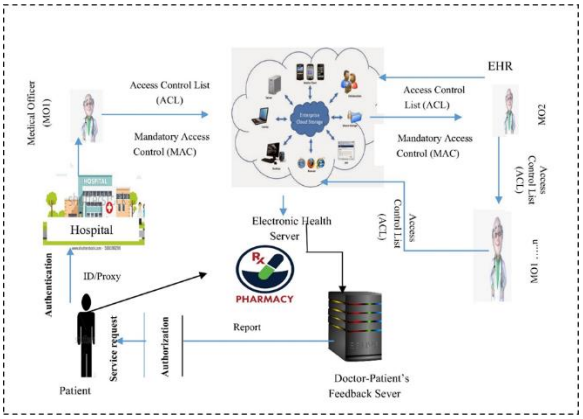

Figure 2: Sustainability and scalability were shown to be influenced by several aspects of Health TAPESTRY operations and interventions.

3.4 Privacy and Security Measures

Privacy and security measures are paramount in AI healthcare cloud infrastructure. Robust encryption protocols safeguard patient data from unauthorized access, ensuring confidentiality. Access controls and authentication mechanisms prevent unauthorized users from accessing sensitive information. Regular security audits and updates help identify and mitigate vulnerabilities, ensuring system integrity. Compliance with regulatory standards such as HIPAA and GDPR ensures legal and ethical handling of patient data. Transparency in data usage and patient consent mechanisms foster trust and accountability. Overall, stringent privacy and security measures are essential to protect patient confidentiality and uphold ethical standards in AI healthcare cloud infrastructure.

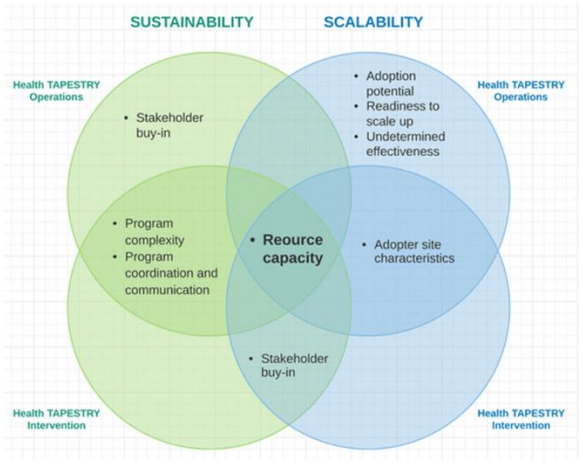

Fig. 3: demonstrates the suggested e-health privacy architecture. After it is fully implemented, the architecture is anticipated to perform with a high degree of dependability, efficiency, and reliability in preserving patient information. More specifically, it is anticipated that the architecture will allow for adaptable patient e-health information authentication. Additionally, it is intended that the main stakeholders will have complete control over information and that a system for handling difficult and emergency situations will be available whenever needed.

IV. CLOUD ENGINEERING IN HEALTHCARE: BUILDING BLOCKS OF HEALTHCARE CLOUD

The impact of cloud engineering in reforming healthcare delivery cannot be denied, sitting as a solid structure for sophisticated healthcare technologies to be developed and deployed. Toward the core of the cloud computing currently applied in healthcare, we can see a complex infrastructure of components and foundations that perform various tasks of improving patient care, automation, and optimization. One of the major pillars is cloud storage, which offers features that are both safe and scalable for a data warehouse that is much larger than what typical hospitals and outpatient clinics are used to.

An indispensable element of the cloud computing technology is the on-demand provision of computing resources. This capability facilitates the implementation of complex analysis, intelligent algorithms, and AI-driven insights just to name a few. To complement this, the cloud-based networking technologies allow for instant and smooth communication as well as sharing of data equally amongst various healthcare systems and devices, hence providing the much-needed interoperability and real-time access to patients' information across diverse settings of care.

On the account of cloud-based platforms, healthcare application developers and providers can build healthcare applications, as telehealth, remote monitoring, and individualized medicine solutions, and the patients may benefit from the innovation courtesy of such programs. On the other hand, cloud security features including encryption, access controls, and compliance frameworks, are necessary considerations because they play a key role in

protecting medical data privacy and a safe regulatory environment. The cloud engineering wholly is the foundational element in modern health infrastructures that supply with necessary instruments and technologies to design reliable, responsive, and secured cloud healthcare ecosystems that enhance the innovative capabilities and change the way care is managed.

V. FORMULATING AN EFFECTIVE DATA STRATEGY FOR PATIENT INSIGHTS

The designing a data strategy that results in patient insights should be given the highest priority by healthcare organizations so that they can improve care experience, personalize treatment, and enhance patient outcome b. The overall data strategy includes all of its components, like data collection, integration, analysis, and decision making based on derived insights. In the first place, it is essential for healthcare providers to collect diverse data both from the electronic health records (EHRs), medical imaging, wearable devices, and patient-reported outcomes so that the health service providers can evaluate and have a comprehensive patient picture. This integration of diverse data sources promotes a more complete picture of the patient's health and also strengthens the doctor's ability to make sound decisions.

Additionally, the use of advanced analytics tools and methods for the purpose of the analysis of the integrated data and the consequent extraction of valuable and deep sometimes is employed. Machine learning algorithms, predictive analytics, and natural language processing (NLP) permit doctors to recognize the patterns, trends, and cause-and-effect relationships within the data which makes it possible to predict diseases better, stratify the risks, and optimize treatment options (Rajkomar et al., 2018).

Besides the fact that data utilization is very critical, the findings must be changed to multiple interventions which can take place in areas of care. Doctors can use patient insights to personalize treatment plans, remote disease monitoring and for engaged participation of patients in decision making. As an illustrative example, machine learning models can be designed to identify patients having elevated risk of hospital readmission and consequently, medical intervention can be used early to prevent complications hence (Topol, 2019).

VI. HARNESSING THE POWER OF ARTIFICIAL INTELLIGENCE IN HEALTHCARE

6.1. Clinical Decision Support Systems

CDSSs are the tools used to initiate the integration of AI strengths into the healthcare process of delivering care and provide clinicians with meaningful clinical decision support and evidence-based advice when the care is provided. Healthcare systems use extensive data analysis, which is an enormous amount of patient data such as electronic health records, medical imaging, and genomic data, to name a few, during treatment as well as during the diagnosis to assist healthcare providers when they are making informed decisions on patients treatment plans.

The AI-aided CDSS rely on complex algorithms and machine learning techniques to establish relationships, trends and co-relation within patient data, thus enabling the delivery of the needed risk stratifications, disease predictions and ideal treatment options. A patient-centered AI-driven CDSS that employs patient-related age, medical data, genetic aspects, and personalized information to achieve preciseness of recommendations would culminate in personalized and productive care.

More importantly, this new AI technology helps ensure a smooth clinical workflow by automating repetitive processes at the patient's level. This frees doctors from this cognitive task, and by extension, doctors save time on decision-making. A communication channel is built among the staff groups and inside the system itself. Patient information, status quo, progress, decisions regarding care, and other medical details are made available in real-time.

About the issue, AI integration in healthcare brings about several benefits for patients, like improved care portfolios, clinicians clinical skills improvements and remodeling of healthcare service delivery thanks to Clinical Decision Support systems (CDSSs).

i.Enhancing Clinical Decision-Making with AI

The revolution involving artificial intelligence technologies is in the middle of a revolution, and it includes how physicians decide because they offer them high-quality information that is resourced empirically. AI technology has shown fantastic talent in searching countless patient data and finding patterns the existing healthcare crew may miss. The latest development may be associated with making systems of connecting patients' data, like medical histories and genetic clues, into individual radios. Also, those systems help to diagnose more correctly. AI robots' powerful tools rule the speed of healthcare processes and the cognitive load and teamwork collaborations within healthcare orchestras. In short, AI give doctors a solid knowledge base and removes subjectivity from decision-making. With that, the results are very excellent.

6.2.Remote Patient Monitoring

ii.Optimizing Patient Care Delivery Through AI Integration

Healthcare is essential to human life, and incorporating artificial intelligence is critical in effectively delivering patient care (Jiang et al., 2017). Such technologies as AI-driven machine learning algorithms and natural language processing empower clinicians to find analytical intelligence among patient data and develop specific recommendations and step-by-step instructions. Proactive facility management allows healthcare providers to interpret and prevent patients' health risks, identify health needs, and shape treatment plans to ensure successful patient outcomes and minimize adverse reactions.

Additionally, AI integration cuts down on the existing clinical workflows' manual tasks, automating schedule making and electronic medical record administration, consequently improving the care provision by the clinical staff. Virtual assistants based on AI can supply patients with personalized direction, perform distributed monitoring of the patient's health condition, and give timely interventions. Such vehicles offer increased efficiency and effectiveness of resources. They are marked as such that address health gaps by ensuring universal availability of high-class medical care to any patient without discrimination according to location or social background.

6.3. AI-Enabled Healthcare Interventions

Artificial Intelligence (AI) as the last word in evolving medical approach, gives birth to unconventional but effective ways of betterment of patient's health and optimization of clinical procedures. These interventions reformat several features of healthcare delivery by employing different artificial intelligence (AI) technologies including machine learning algorithms, natural language processing, and predictive analysis (Topol, 2019).

Assisting doctors with diagnoses and making future prognosis are particular applications of AI used in therapy. A great quantity of patients' data like electronic medical records or medical imaging scans can be examined with deep learning algorithms to find out tendencies and diseases at early stages. First leads to a reduction in medical expenses and better patient outcomes due to the very possibility of early discovery and therefore, prompt intervention and individual treatment.

AI-driven applications are expected not only for the treatment and support but also for decision guidance and the therapy optimization. Artificial intelligence machines can inform the physician about evidence-based treatment recommendations, adjusted dosage recommendations, and management of drugs by reviewing the patient data and clinical protocols. The provision of such care gives the maximum opportunity for patients to receive personalized care and assists clinicians in making better decision-making.

AI - centered therapies, therefore, increase the value of telemedicine and enable medical practitioners to interact with patients as well as monitor their health status remotely and in real-time. Healthcare systems will no longer be overcrowded by meaningless hospital admissions caused by this kind of diseases exclusion. In the addition to that, people from remote areas will be provided with treatment as well along with everybody.

Overall AI applications are here to stay, and there is no doubt that they have a tremendous possibility to transform the whole healthcare model, implementation of remote patient monitoring and continuity of care, to diagnosis and treatment. Healthcare workers will increase patient satisfaction,

efficiency, reliability of information, as a result, they can take in better individual and population health decisions by using AI technologies.

VII. ADOPTION AND IMPLEMENTATION STRATEGIES

Appropriation and utilization are two key factors that will help understand the full benefits of the AI technology's capacities (Liu et al., 2019). Another strategic approach is implementing a culture of innovative technologies and digital transformation in healthcare organizations. This incorporates advocating the spreading of awareness and the conception of AI among doctors, helping in the application of AI-powered solutions by the doctors and also in the training and support of doctors to quickly embrace AI technology (Huang et al., 2020).
An integral part of implementing AI in healthcare is interoperability and integration with the current systems and workflows in place in the healthcare system. AI solutions should be designed to fit without hindering the operations of all clinical applications, including electronic health records, medical imaging systems, and all other clinical applications, to properly leverage their value.

Besides, dialogue and action between healthcare institutions, tech companies, and scientific organizations could be the key element that creates AI potential (Liu et al., 2019). By cooperating, stakeholders can open up to each other, which implies they can share skills, resources, and experience, cutting the development and deployment time for AI solutions in care.

Also, ethical, legal, and regulatory matters must be considered as they form a basis for the trust and confidence in healthcare AI solutions to keep developing (Raghupathi & Raghupathi, 2018). This refers to the fact that data privacy and computer security should come first, and any bias or disadvantage should be mitigated. Also, national and international health standards for healthcare must be implemented.

In total, for the application of AI in health care, "complete way" should be used where industry culture, technological infrastructure, collaboration and ethical sides are involved. Through carefully organising and implementing these methodologies, healthcare institutions will tap AI's potential to improve healthcare outcomes, speed up operational processes, and make breakthroughs in healthcare delivery innovations.

VIII. GLOBAL PERSPECTIVES ON AI HEALTHCLOUD ADOPTION

8.1 Cross-Cultural Considerations in HealthCloud Implementation

Cross-cultural dimensions are a significant factor in achieving the success of HealthCloud solutions as healthcare services are made available, equitable, and culturally sensitive to a broader population. The second factor of a cross-cultural framework comprehends the different culturally based beliefs, values, and norms of the patient populations. The attempt to do this begins with identifying the language preferences, religious rites, and traditional medicine practices that affect how people interact with healthcare services (Betancourt et al., 2003).

On the one hand, cultural competence among healthcare professionals is a primary need in implementing culturally responsive care and developing trust with patients from different cultural contexts. Health practitioners should be conversant with empathetic communication and engagement with patients from different cultures, respecting their views and preferences while administering quality health services (Dreachslin et al., 2008).

HealthCloud platforms shall be developed considering cultural diversity. Thus, they should be multilingual and have culturally relevant educational materials and culturally/ethnically competent decision support tools (Thompson & Kinne, 2014). By eliminating cultural barriers and adopting tailored HealthCloud solutions that correspond to different populations ' specific needs, healthcare organizations can improve access to care and optimize patient engagement. These measures will improve health outcomes for all individuals, regardless of their cultural background.

8.2 International Collaboration for Standardization
Collaboration among nations for standardization in the health sector and HealthCloud should be a priority to guarantee interoperability, data protection, and high-quality care across borders. As healthcare systems become increasingly interconnected and data-dependent, standardization efforts are essential in bringing together technical specifications and data formats and regulating frameworks worldwide aimed at smooth health information interchange (Oh et al., 2014).

Joint projects, which unite international healthcare organizations, standards development organizations, governments, and industry representatives, are the most efficient way to create and implement the common standards for HealthCloud platforms. These standards entail different HealthCloud implementations, including privacy and security data, interoperability protocols, and data exchange formats (Adler-Milstein et al., 2017).

Collaboration between different countries encourages knowledge exchange and practice sharing. Thus, healthcare organizations can use other countries' experience and leverage experts worldwide to tackle common problems in HealthCloud deployment (World Health Organization, 2018). Coordination can be achieved for the nations to align their National Health Cloud strategic plans with international standards, fostering interoperability and data exchange while preserving patient privacy and data confidentiality.

However, international collaboration and standardization in HealthCloud will be critical for healthcare systems globally to maximize the cloud's benefits for patients, healthcare providers, and the population as a whole.

8.3 Policy Harmonization and Regulatory Alignment
While the principle of ease of adoption of an artificial intelligence trend has been set for HealthCloud regions, the main ethics must be aligned with the policies of all parties concerned. existence of policies and laws which will be coordinated properly and strive to regulate the AI implementations in the health care systems due to its fast speed and it is being adopted by health systems at a global level (Davenport & Kalakota, 2019).

Data conversion and interoperability can be achieved among the different health cloud platforms that cross the borders, thus allowing the exchange of health information while approaching issues like privacy and security laws (Lähteenmäki & Savela, 2020). In case, common issues related to data protection, consent management and liability in the healthcare apps a result of AI driving are faced, countries can be addressed by harmonizing their regulatory frameworks (World Health Organization, 2020).

Besides, the governmental alignment involving the definition of the guidelines as well as legal norms is supposed to be crucial in facilitating the innovation as well as investment in the field of iAI health technology (Lähteenmäki & Savela, 2020). It ensures such a safe atmosphere for innovations and research by way AI being valuable and enhancing healthcare services

However, the harmonization at the policy level and the compliance at regulatory level AI Healthcloud would make sure interoperability, patient privacy and the innovation in health sector. The harmony established by the nations through the make-up of policies that are pure and unified project the capability to harness the power which AI technology extraordinarily possess for the benefit of humankind rising the level of health and quality of care.

IX. FUTURE HORIZONS: EMERGING TECHNOLOGIES AND TRENDS IN HEALTHCARE

A modern healthcare landscape will be defined by how advances in technology and trends, which are on the verge of transforming how we care for our patients, manage diseases, and deliver healthcare, evolve in the coming years. One such trend is the mass increase in telehealth and virtual care that has been boosted since the outbreak of COVID-19 (Hollander & Carr, 2020)). Doctors and other healthcare professionals can provide remote online consultations through telemedicine platforms and monitor and diagnose your condition from anywhere. In this way, care is being improved for those in underserved areas and healthcare inequities are being reduced.

Besides, among other significant strides in areas such as AI and machine learning, the fundamentals of healthcare are getting redefined right from diagnostic imaging to personalized treatment planning (Topol, 2019). AI-driven algorithms can provide the possibility of analysing massive datasets, identifying patterns, and predicting final medical outcomes with unbeatable accuracy. For this reason, healthcare organizations could give more exact care tailored to the needs of each patient.

In addition, the Internet of Medical Things (IoMT), a growing area of the Internet of Things, promises to change the healthcare industry through the connection of medical devices and sensors to the Internet. This makes it possible to monitor patients at a remote distance and acquire real-time data (Bragazzi et al., 2020). The IoMT devices could monitor vitals, medication compliance adherence, and illness trends, allowing early interventions and treatment.

Apart from this, applying block chain technology could be the key enabler that would create feature-rich security, efficiency, and transparency within healthcare systems (Yaqoob et al., 2019). Blockchain, via the use of decentralized ledgers and sharing data, actually does a lot more to streamline data exchange among all stakeholders and protect privacy concerns. Given that genomics and precision medicine mean a massive change in approaches to personalised medicine, the latter can be unique since individuals' genetic variations and personal molecular profiles provide a basis for targeted prescription (Schork et al., 2018). Physicians now have an advantage over genome sequencing technologies: they can accurately identify a disease's genetic predisposition, choose appropriate medications, and monitor therapy results in real-time.

CONCLUSION

The debate network around Artificial Intelligence (AI) in the medical health sector has revealed that AI is poised to reshape the medical sector. AI technologies like machine learning, data analytics, and cloud computing have revolutionized the healthcare sector by introducing innovative avenues in patient management, clinical decision-making, and healthcare delivery efficiency.

It is anticipated that AI-based technologies will bring positive outcomes to a number of application areas in healthcare; those include clinical decision support systems, imaging diagnostic, and patient interaction. Health sector providers can use the power of big data to detect illness trends, forecast patient outcomes, and create treatment plans through using algorithms that are conducted by AI and predictive analytics (Esteva et al., 2019; Rajkumar et al., 2019). Besides, fog data analytics is the live analysis of data on healthcare cloud systems, which gives medical professionals critical information for the patient care, clinical workflow, and healthcare success (Hollander & Carr, 2020).

The realm of AI innovations is unlimited in terms of providing better medical research and better patient care. Progress can be made regarding the introductory stage of AI in healthcare and provide opportunities for everyone to access the best care by leveraging cross-disciplinary collaboration, promoting the international norms and laws, and putting patients' needs first.

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