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Review Article

Next-Gen Post-Diagnostic Care through Centralized AI and Smart Wearable Devices for Chronic Disease Management: A Narrative Review

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ABSTRACT

This article presents a futuristic framework for incorporating centralized AI to revolutionize patient care, focusing on the post-diagnostic care and management of various chronic conditions. Through the integration of centralized AI with remote monitoring devices, smart wearables and home appliances, a futuristic approach to post-diagnostic care is proposed, serving diverse needs of patients with cardiovascular diseases, diabetes mellitus and sleep disturbances. By employing the power of AI, healthcare providers can deliver timely interventions, optimize treatment outcomes and enhance the overall quality of care for patients with chronic diseases. The Centralized AI system, equipped with advanced algorithms and extensive medical knowledge, facilitates personalized interventions, medication adherence reminders, lifestyle recommendations and continuous monitoring of physiological parameters. Using this centralized AI we can empower patients, support healthcare providers and ultimately improve the well-being and longevity of individuals living with chronic conditions.

Keywords: Artificial Intelligence, Smart wearables, Remote monitoring, Chronic disease management, Data analysis, Patient care management.

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INTRODUCTION

Artificial intelligence is a software-based system capable of performing tasks requiring Human intelligence. In simple words, it is the ability of Computers to think and respond. Some of the tasks that can be performed by AI are Learning, Recognizing, Analyzing and Interpreting.[1] Decision-making, Problem-solving, Critical-thinking and Work-management. It can perform tasks within software systems and complete them in less time, high accuracy and lesser errors ultimately focusing on saving time and energy of humans. Artificial Intelligence is comprised of Algorithms, Neural networks and Data fed to the software systems. One such application of AI is Amazon's Alexa; it offers hands-free interaction through voice commands, enhanced by its extensive ecosystem of third-party skills and integration with Amazon services, making it a versatile and personalized assistant for users' everyday needs.[2] Amazon Alexa offers personalized recommendations beyond basic voice commands, tailoring suggestions for entertainment, shopping, news updates and more based on individual preferences. From music playlists to video content and product recommendations, alexa ensures users have personalized experiences. These capabilities extend beyond entertainment into various aspects of daily life, enhancing convenience and enjoyment. Integrating such personalized AI abilities into healthcare holds immense potential for driving evolution in the field.[3,4]

Artificial Intelligence in Healthcare

AI algorithms analyze medical images such as X-rays, MRIs and CT scans to detect abnormalities, aiding radiologists in accurate diagnoses.[5] Also provides personalized treatment plans that are crafted based on individual patient characteristics, genetic makeup[6] and medical history, enhancing patient outcomes. Administrative tasks, including appointment scheduling, electronic health record management and insurance claims processing, are streamlined through AI implementation. Electronic health record systems streamline administrative tasks.[7] Genomic analysis guides personalized medicine by understanding individual health risks and treatment responses.[6] Robot-assisted surgery enhances precision in minimally invasive procedures, improving patient outcomes.[8] AI-powered medical devices analyze complex data for better diagnostics and treatment, demanding rigorous testing and ethical deployment.[9] Overall, AI-driven innovations hold

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immense potential to transform healthcare delivery, improving patient care and outcomes.

Post-Diagnostic care

Post-Diagnostic care is the care and support provided to the patients who received diagnosis for a medical disorder or disease, before or after discharge from the hospital. Post-diagnostic care typically involves a range of services provided by the medical practitioners such as medical treatments, therapies, counselling, lifestyle modification, remote patient monitoring and other support services for patient's wellness. Patients affected by chronic diseases require additional care even after discharge from the hospital. Sometimes, unexpected deaths occur to post-discharged patients.[10,11]

Remote Monitoring of Patients (RPM) is a modern healthcare approach leveraging technology to collect and transmit patient data from outside traditional healthcare settings to healthcare providers for monitoring and analysis. This approach involves various devices such as wearable sensors and mobile applications, enabling continuous or periodic monitoring of vital signs and health indicators like blood pressure, heart rate and activity levels. Patients wear or use these devices, which collect data in real-time or at scheduled intervals. The collected data is then securely transmitted to healthcare providers for remote monitoring and analysis. Incorporating Remote Patient Monitoring (RPM) into post-diagnostic care for chronic disease management presents a transformative approach in healthcare delivery. Physiological parameters are measurable signs or characteristics of how our body works. They give us important information about how well our body's systems are functioning. Vital signs, comprising heart rate, blood pressure, respiratory rate and body temperature, represent fundamental physiological functions critical for life and are routinely measured in healthcare settings. Regular monitoring of parameters like blood glucose levels, electrolyte balance and cholesterol levels enables early detection of health issues and facilitates timely interventions to prevent complications. The technology in healthcare has improved a lot so that some physiological parameters can be measured without pricking the skin and without requiring blood to interpret the results. These devices are called physiological monitors. These devices include wearable devices, diagnostic devices, medical devices and many more.

Smart Wearable Devices

Smart wearable devices are gadgets that are worn on the body that uses sensors and connectivity features and track various physiological parameters, activity tracking and provide health related metrics. These smart wearable devices are synced to the smartphones and cloud systems where all the user's monitored data are stored and provide users with real-time data insights and personalized feedback, contributing to a holistic approach to monitoring health and wellness.

Let's categorize the smart wearable devices into two groups:

Commercial Smart wearable devices,

Clinical Smart wearable devices.

Commercial Smart wearables

Commercial smart wearables encompass consumer-oriented gadgets that are widely available for personal health and fitness monitoring. These devices are primarily designed to monitor physiological parameters and offer additional functionalities tailored for smart features such as touch interface, voice commands, GPS tracking, smart phone integration and many more. Some of the commercially available smart wearable devices that helps in monitoring physiological parameters are:

Smart Watch

A smart watch is a wearable device that combines the functionalities of traditional watches with advanced features often found in smartphones. Smartwatches can monitor heart rate, sleep tracking, blood oxygen, electrocardiogram, temperature sensing, menstrual cycle tracking and fall detection.[12] Using the monitored data of various physiological parameters, smartwatches can detect cardiovascular disorders,[13] brain disorders, movement disorders,[14] COVID-19[15] and other disorders based on algorithms. Some examples for smartwatches are Apple watch, Samsung Galaxy watch 6 and Withings Scanwatch.[16]

Smart Ring

A Smart ring is a wearable electronic device that typically fits into a finger and provides various functionalities like smartwatches. capabilities to track physiological parameters such as heart rate, sleep patterns, activity levels, body temperature, stress monitoring and blood oxygen.[17] The Oura Ring demonstrates similar or superior accuracy in recording physiological measures compared to other wearables like the Apple Watch and Fitbit.[18] The smart ring can detect atrial fibrillation,[19] arrhythmia and other disorders, similar to those detected by a smartwatch.

Smart Fabrics

Smart Fabrics are the textiles embedded with sensors and advanced materials, enabling unique functionalities beyond traditional fabrics, such as monitoring physiological parameters and regulating temperature, making them innovative solutions for various applications.[20]

Clinical Smart wearable Devices

Clinical smart wearable devices are those not commercially available, intended for continuously monitoring individual physiological parameters. These devices are recommended by physicians for patients requiring remote monitoring or in-hospital use in managing chronic diseases some of the clinically used smart wearable devices are detailed in Table 1.

Table 1: Sensitivity and Accuracy of various wearable devices.

Title	Study Design	Devices	Aim of the Study	Results
Arrhythmias Beyond Atrial Fibrillation Detection Using Smartwatches: A Systematic Review.[13]	Systematic review	Smart Watch (Apple watch and Samsung watch).	To determine the ability of smart watch to detect cardiac diseases.	Smart watches can detect Arrhythmias, including ventricular tachycardia, atrial fibrillation, atrial flutter, atrioventricular nodal re-entry tachycardia, atrioventricular re-entrant tachycardia, second- or third-degree atrioventricular block and sinus bradycardia.
Atrial fibrillation detection in ambulatory patients using a smart ring powered by deep learning analysis of continuous photoplethysmography monitoring.[19]	Prospective single arm study.	Smart Ring (Cardiotracker, SkyLabs).	To validate the performance of AF detection among ambulatory patients.	The Smart ring has 98.7% sensitivity, 97.8% specificity and 2.2% false positives for AF detection.
Validity, Reliability and Sensitivity to Change of Three Consumer-Grade Activity Trackers in Controlled and Free-Living Conditions among Older Adults.[26]	Validation Study.	Activity and Fitness trackers (Polar Vantage M, Garm *in vivo* active 4s and Garm *in vivo* sport).	To assess the validity, reliability and sensitivity to change in movement behaviour metrics.	The average calculated walking speed for preferred pace walking was 4.4±0.6 km/hr and for slow-paced walking was 3.4±0.4 km/hr. All activity trackers showed their best performance for the preferred pace walking task and slightly lower performance for the slow pace walking task.
Performance of handheld electrocardiogram devices to detect atrial fibrillation in a cardiology and geriatric ward setting.[23]	Observational Study.	ECG Monitoring Devices (myDiagnostick and AlivCor).	To determine the usability and accuracy of two handheld single lead ECG devices for AF screening.	Sensitivity and specificity of the automated algorithms were suboptimal. Cardiology: 81.8 and 94.2%, respectively, for MyDiagnostick; 54.5 and 97.5%, respectively, for AliveCor.
A comparative study of automated blood pressure device and mercuryfree LED blood pressure device using Lin's concordance correlation coefficient and other validity measures in Indian population.[24]	Comparative study.	Blood Pressure monitoring device.	To compare sensitivity and specificity of automated device with mercury free LED BP device.	The sensitivity, specificity, PPV, NPV and accuracy of automated BP devices to predict hypertension is 96.61%, 92.21%, 75%, 99% and 93%, respectively.

Title	Study Design	Devices	Aim of the Study	Results
Clinical validation of a contactless respiration rate monitor.[16]	Cohort study	Respiratory rate monitoring devices (Sleepiz one+).	To validate the accuracy of Contactless respiratory monitor.	In a more natural setting, the agreement remained high, with an accuracy of 99.5% and a MAE of 0.48 Brpm for instantaneous breathing rate.
Validation of the Withings Sleep Analyzer, an under-the-mattress device for the detection of moderate-severe sleep apnea syndrome.[25]	Clinical trial.	Sleep tracker (Withings sleep analyzer).	To assess the diagnostic performance of Non-invasive device placed under the mattress to detect sleep apnea syndrome.	The Withings Sleep Analyzers accurately detect moderate-severe sleep apnea syndrome with high sensitivity and specificity.

Continuous glucose monitoring device

Continuous Glucose Monitoring (CGM) devices are wearable medical devices designed to monitor glucose levels continuously in individuals with diabetes. The sensor is connected to a transmitter that wirelessly sends glucose data to a receiver or smartphone app, providing real-time glucose readings and trends. Some examples of CGM devices are Freestyle Libro pro and Dexcom G6 pro.[21]

ECG Monitoring Devices

Wearable ECG monitoring devices are advanced medical tools designed for continuous remote monitoring of the heart's electrical activity. The collected data is wirelessly transmitted to receivers, smartphone apps, or cloud-based platforms, enabling healthcare professionals to remotely monitor patients' cardiac status in real-time or retrospectively. This remote monitoring capability is invaluable for patients with cardiac conditions, allowing for early detection of abnormalities and timely intervention, ultimately improving patient care and treatment outcomes.[22]

Blood Pressure monitors

Digital and smart blood pressure monitoring devices offer convenient and accurate solutions for monitoring cardiovascular health. Smart blood pressure monitors integrate with smartphones or digital devices via bluetooth or wi-fi, allowing users to track their readings over time, set reminders and share data with healthcare providers.[23]

Pulse oximeters & Respiratory rate monitoring devices

Pulse oximeters and respiratory rate monitors are essential tools for evaluating respiratory health and oxygen levels. Commonly utilized in hospitals, clinics and home care, pulse oximeters provide crucial insights into oxygen delivery to bodily tissues, especially for patients with conditions like COPD and sleep apnea.[24]

Similarly, respiratory rate monitors assess ventilation efficiency by counting breaths per minute. These monitors often feature sensors placed on the chest or abdomen to detect chest movement or airflow changes during breathing. They are vital for monitoring respiratory distress, identifying respiratory depression and assessing breathing during anesthesia or sedation. Modern pulse oximeters and respiratory rate monitors often have bluetooth or wi-fi connectivity, sending data to smartphones or digital devices.

Sleep Tracking devices

Sleep tracking devices, like wearable headbands, are innovative tools offering insights into sleep patterns and quality. Patients with sleep disorders, such as insomnia or sleep apnea, can greatly benefit from the detailed sleep metrics provided by these devices, aiding in diagnosis and treatment planning.[25] Notable examples of such devices include headbands from brands like Dreem and Philips.

Centralized AI

Centralized AI is an artificial intelligence system that operates through a centralized infrastructure, where all data processing, analysis and decision-making are consolidated into a single platform. In this setup, data from diverse sources are collected and aggregated in one central hub, allowing AI algorithms to extract insights, patterns and predictions efficiently. One such example is Alexa's smart home technology, where Alexa serves as the central AI capable of controlling all smart home appliances as commanded by the user. This Centralized AI system has become widely favoured by users, as it simplifies tasks and automates processes with pre-set commands. Acting as a virtual assistant, Alexa interacts with users regarding problems, queries and commands, storing all pertinent information for future reference.

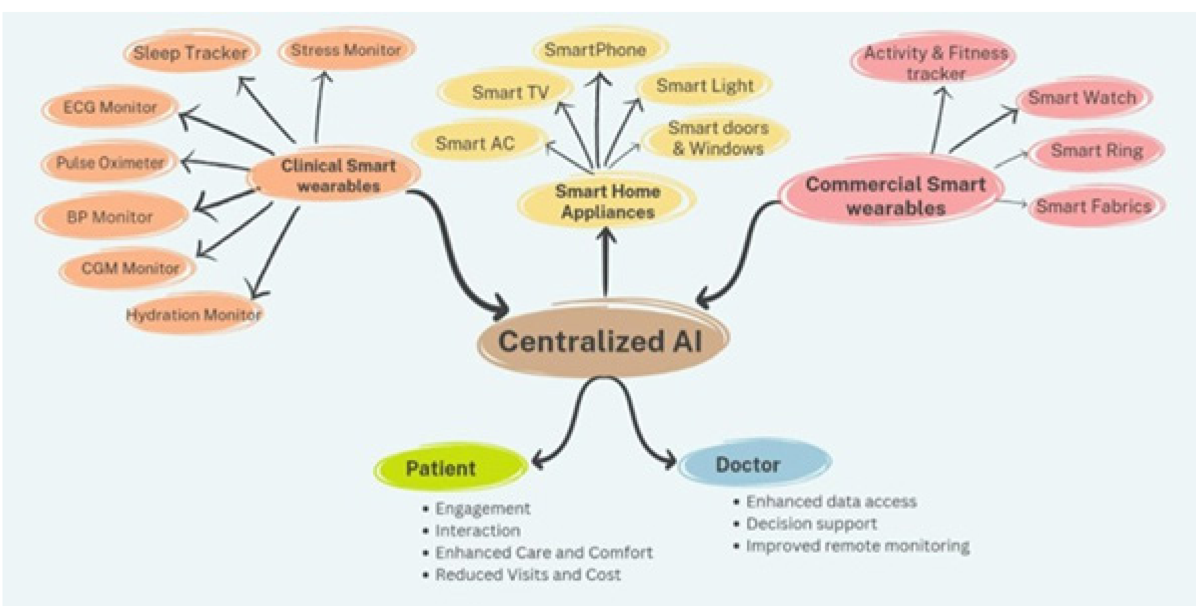
Centralized AI in Patient Management

Traditionally, remote monitoring of patients typically involves periodic phone calls or home visits by healthcare providers to check on patients' health status and collect information, supplemented by paper-based diaries or logs kept by patients to record symptoms and vital signs for later reporting during clinic visits. Currently, remote monitoring is facilitated through remote patient monitoring devices. The collected data is recorded in Electronic Health Records (EHR) systems and evaluated during the patient's visit to physicians. Integrating a centralized AI with remote monitoring devices and smart wearable devices will facilitate optimal post-diagnostic care. The networking abilities, predictive analysis, device control capabilities and personnel recommendation and interaction provided by centralized AI will contribute to enhancing remote patient monitoring. Interaction with AI can be achieved through voice commands using speakers, smartphones, smart watches and other smart devices like Alexa. Centralized AI can be networked with clinical and commercially available smart wearable devices along with Alexa's smart home appliances.

Integrating smart home appliances with remote patient monitoring systems enhances patient care by providing a futuristic view of the patient's environment and lifestyle. Smart home devices can monitor environmental factors like temperature, humidity and air quality, alerting caregivers to potential health risks. Additionally, smart pill dispensers and medication reminders help patients adhere to their treatment plans, while activity tracking features provide insights into the patient's daily routines and mobility. Safety and security are improved with smart home security systems and emergency response devices, ensuring prompt intervention in case of emergencies. By remotely controlling and monitoring smart home appliances, caregivers and healthcare providers can optimize the patient's environment for health and comfort, while integrated data analysis enables personalized care and treatment plans based on the patient's lifestyle and home environment.

This Centralized AI system is equipped with a inbuilt knowledge to support patients with chronic diseases. This includes extensive information about various diseases and their management strategies, encompassing medication regimens, dietary recommendations and lifestyle modifications. Additionally, the Centralized AI system possesses a deep understanding of medicine information, including drug-drug interactions, social history, medication history and drug allergies. It is proficient in identifying and analyzing potential drug-drug interactions to ensure patient safety and optimize treatment outcomes. Moreover, the Centralized AI system has a strong foundation in interpreting and analyzing laboratory reports, including biochemistry, haematology, urine analysis and other diagnostic tests. This enables the Centralized AI system to extract valuable insights from patient data, track disease progression and tailor personalized care plans based on individual patient needs. Furthermore, the Centralized AI system integrates patient education tools and risk assessment algorithms to empower patients with knowledge about their condition and treatment options, while also helping healthcare providers prioritize interventions for patients based on their risk profiles. Importantly, the Centralized AI system possesses knowledge like that of a physician and can interact not only with patients but also with healthcare providers. It facilitates collaborative decision-making by engaging in discussions with physicians and providing timely reminders about patient allergies and other relevant health issues, ensuring that potential allergens or contraindications are considered when suggesting medications or diet plans, thus optimizing patient care.

Moreover, the Centralized AI system continuously acquires knowledge through interactions with patients and the analysis of



their health records. Through these interactions, the Centralized AI system gathers valuable insights into patients' health status, symptoms and treatment responses. It updates its knowledge base with changes in prescription by the doctors, modifications in diet plans, reminders for the next hospital visit and daily monitoring of physiological parameters. The Centralized AI system generates daily reports on the monitored physiological parameters and promptly notifies physicians of any significant changes or trends. Physicians can provide feedback and updates to the Centralized AI system, allowing for dynamic adjustments to treatment plans or medication strategies. Importantly, the Centralized AI system also tracks the history of variations in physiological parameters and provides recommendations for activities to improve health. Additionally, the Centralized AI system offers support for stress management and mental health, providing motivation and encouragement to patients. By analyzing electronic health records, the Centralized AI system can further refine its understanding of patient conditions, track progress over time and adapt recommendations accordingly. This seamless communication ensures that patients receive personalized care and timely interventions based on the latest medical information.

Optimizing Centralized AI system-Possible strategies for Chronic disease Management

Cardiovascular diseases

Cardiovascular disease, comprising various heart and blood vessel conditions, includes arrhythmias, hypertension, myocardial infarction and coronary heart disease, resulting from plaque build-up in the coronary arteries, leading to restricted blood flow to the heart. Smart wearables such as smart watches, smart rings, ECG monitors, blood pressure monitors and stress monitors can detect these cardiovascular diseases, enhancing early detection and management. Factors such as electrolyte imbalance, sedentary lifestyle, excessive alcohol consumption, smoking, stress, engaging in heavy exercise, high blood pressure, high cholesterol, an unhealthy diet, physical inactivity, obesity and diabetes contribute to the development and exacerbation of cardiovascular diseases.[27,28] Centralized AI system aids in managing cardiovascular diseases by reminding patients to take medications on time, promoting adherence and monitoring for medication side effects, ensuring patient safety and treatment effectiveness. Moreover, it helps in planning diet and nutrition, recommending balanced meal options and limiting intake of saturated fats, cholesterol, sodium and refined sugars, thus supporting cardiovascular health and disease management.[29] Additionally, incorporating hydration monitoring devices into the centralized system will help in reminding patients to drink water regularly, ensuring adequate hydration levels, which is essential for overall cardiovascular well-being. Furthermore, the Centralized AI system assists in encouraging physical activity,[30] warning when abnormalities are found during workouts and guiding patients through breathing exercises, providing motivation and encouragement via smart TV and speakers connected to the Centralized AI system platform. Moreover, giving psychological support through interactive means helps patients create a positive environment, contributing to their overall well-being and disease management. Centralized AI system facilitates scheduling doctor visits and lab tests, while generating comprehensive daily reports of physiological data, seamlessly integrated into patients' health records.[31] This ensures accurate diagnosis and effective treatment planning by healthcare providers. The Centralized AI system, equipped with knowledge of emergency medications, swiftly recommends appropriate treatments during critical situations and sends SOS alerts to healthcare providers for prompt intervention and assistance, ensuring patient safety and effective emergency management. The Centralized AI system facilitates relaxation techniques, stress reduction strategies and cardiac rehabilitation programs through smart TV connectivity, providing comprehensive support for patients' mental and physical well-being. In addition, the Centralized AI system employs smart windows and doors to prevent shock from sudden sounds during rest, ensuring a comfortable environment for patients.

Diabetes Mellitus

Diabetes mellitus is one of the most common chronic health conditions globally. Individuals with diabetes are at increased risk of developing cardiovascular diseases.[32] Despite advancements in treatment, diabetes mellitus is not curable and even with proper medication, there can be variations in blood glucose levels due to factors such as unbalanced diet, stress, obesity and social habits like alcohol consumption and smoking, as well as inadequate exercise and other risk factors include high blood pressure, high cholesterol levels, sleep apnea and obesity or overweight.[33] The Centralized AI system provides timely reminders for patients to take their prescribed medications, enhancing medication adherence, also assists in planning diets that limit the intake of sugary foods, refined carbohydrates and saturated fats, promoting healthier eating habits and better blood sugar management.[34] Additionally, the Centralized AI system can monitor real-time glucose levels of the patients using Continuous Glucose Monitoring (CGM) monitors and keeps an eye on the cardiac health of the patient through ECG meters, smart watches and smart rings. Moreover, the Centralized AI system guides physical activities essential for diabetes patients through smartwatch and smartphone apps, ensuring comprehensive support for diabetes management. Furthermore, the Centralized AI system provides motivation, encouragement and mental support to the patients,[35] assisting them in quitting smoking,[36] reducing alcohol consumption and avoiding junk food, thereby promoting overall health and well-being. Integrating the Centralized AI system with smart insulin pumps allows for the proper release of insulin as recommended by the physician, helping to reduce

the risk of hypoglycaemia and hyperglycaemia. Additionally, the Centralized AI system can analyze physiological parameters and prepare a daily report, updating the doctor regarding the patient's improvement and planning physician visits accordingly.[37]

Sleep Disorders

Sleep disorders includes various conditions affecting the quality, duration and pattern of sleep, such as sleep apnea and insomnia. These disorders can have significant implications for overall health and well-being. With the use of smart wearable devices such as smartwatches, smart rings, respiratory monitors and sleep tracking devices, remote monitoring of sleep disorders has become increasingly feasible. These devices are equipped to monitor respiratory rate, breathing patterns and sleep quality, providing valuable data for remote assessment and management of sleep disorders.[38] Additionally, even after diagnosis, patients may still experience sleep disturbances due to various risk factors such as excess weight, obesity, stress, smoking, alcohol consumption, nasal congestion causing difficulty in breathing, sleep position, poor sleep hygiene and consumption of caffeine and nicotine, all of which can disrupt sleep patterns.[28] Centralized AI systems serve as a solution to effectively manage sleep disorders and improve sleep quality by providing personalized interventions based on continuous monitoring and analysis of relevant physiological data. The Centralized AI system also assists in creating personalized diet plans tailored to each patient's needs, emphasizing the importance of limiting caffeine and nicotine intake and recommending light, easily digestible foods to promote better sleep. By addressing various factors that affect sleep quality, such as environmental factors, lifestyle choices and dietary habits, the Centralized AI system offers holistic support for managing sleep disorders. Also, when networked with Smart lights and smart windows, the centralized AI reduces outside noise and light as soon as patient starts to sleep that is detected by smart wearables. Furthermore, it continuously monitors the patient's sleep patterns and physiological parameters, generating insights that inform adjustments to treatment plans and interventions.

CHALLENGES AND LIMITATIONS

Implementing Centralized AI systems and smart wearable devices in healthcare encounters several challenges and limitations. Foremost among these is the critical issue of data privacy and security, as the handling of sensitive patient information raises concerns about potential breaches and unauthorized access. Interoperability presents another significant hurdle, as integrating different devices and systems may encounter compatibility issues, hindering smooth data exchange and analysis. Additionally, the accuracy and reliability of data collected by smart wearables may vary, impacting the precision of AI-driven analyses and recommendations. User acceptance and engagement also pose challenges, as patients may exhibit varying levels of enthusiasm and adherence to using wearable technology and Centralized AI systems. Moreover, the initial investment and ongoing maintenance costs associated with these technologies may limit their accessibility, particularly in resource-limited healthcare settings. Overcoming these challenges necessitates collaborative efforts among healthcare providers, technology developers and regulatory bodies to ensure data privacy, standardization and affordability while maximizing the benefits of Centralized AI systems and smart wearables in improving patient care.

CONCLUSION

Artificial Intelligence has rapidly evolved across the world, transforming various aspects of our lives, including healthcare. However, despite this advancement, access to doctors and healthcare services remains limited for many, with numerous individuals going undiagnosed for various diseases. In countries like India, where people are often caught up in busy work lives and may not prioritize their health, AI emerges as a promising alternative to address healthcare challenges. Moreover, post-diagnostic care and remote monitoring are crucial for chronic disease patients, as unexpected deaths have been observed in patients discharged from hospitals due to a lack of care provided at home. Monitoring the various physiological parameters through smart wearable devices will be helpful in remote monitoring of chronic disease patients. Integrating Centralized AI system into remote monitoring, networked with smart wearable devices and smart home appliances, will improve patient care and enhance real-time monitoring for predicting early interventions. Additionally, the benefits of this centralized technology for chronic disease patients are significant, offering streamlined management, consistent decision-making and simplified maintenance. Furthermore, challenges such as data privacy concerns and potential single points of failure need to be addressed to ensure effective deployment. Looking ahead, the future of healthcare holds immense potential with the integration of Centralized AI systems and smart wearables, promising transformative advancements in patient care and outcomes. Despite the benefits, limitations and challenges in implementing Centralized AI system remain, including data privacy concerns and interoperability issues. However, with collaborative efforts and advancements in technology, these challenges can be overcome. The future of healthcare is poised for transformative advancements with the integration of Centralized AI systems and smart wearable devices into patient care. By leveraging these technologies, we can revolutionize healthcare delivery across various medical conditions and patient populations, ultimately improving global health outcomes and enhancing quality of life. Addressing challenges like data privacy and security, as well as potential single points of failure, is essential for effective deployment of Centralized AI system in healthcare. Despite these obstacles, the future holds promise with ongoing advancements in technology. By overcoming challenges and leveraging opportunities, we can ensure a future where healthcare is more accessible and efficient, ultimately improving patient care and outcomes.

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ETHICAL STATEMENTS

This narrative review does not involve any new studies with human participants or animals performed by any of the authors. Therefore, ethical approval and informed consent were not required.

ABBREVIATIONS

AI: Artificial Intelligence; **CGM:** Continuous Glucose Monitoring; **COPD:** Chronic Obstructive Pulmonary Disease; **EHR:** Electronic Health Record; **HR:** Heart Rate; **RPM**: Remote Patient Monitoring; **RR:** Respiratory Rate; **AC:** Air Conditioner; **COVID-19:** Coronavirus Disease 2019; **CT:** Computed Tomography; **ECG:** Electrocardiogram; **G6:** Generation 6; **GPS:** Global Positioning System; **PPG:** Photoplethysmography; **REM:** Rapid Eye Movement; **SOS:** Save Our Souls (emergency signal); **TV:** Television; **AF:** Atrial fibrillation; **PPV:** Positive predictive value; **NPV:** Negative predictive value.

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