"Prioritizing Patient-Centric Care: Resolving Long Queues in African Healthcare Systems by Use of Artificial Intelligence"

Long patient waiting times are a severe problem in Africa. For example, in Ethiopia, patients are forced to wait an average of 4.5 hours to receive service in the outpatient department (Outpatient Department of Jimma University Specialized Hospital, 2019). This can have a devastating impact on a patient's health and well-being. Patients may delay or forgo care, which can lead to worse health outcomes. Long waiting times can also be a financial burden for patients, who may have to take time off work or school to travel to the hospital. In this technology-oriented world, Artificial Intelligence (AI) has the potential to be a powerful tool for addressing this problem. AI can be used to predict patient demand, allocate resources more efficiently, and identify patients who are at risk of waiting too long. By using AI, healthcare providers can improve the efficiency of their systems and ensure that patients receive the care they need as quickly as possible.

This article will explore the potential of AI to address the problem of long patient waiting times in Africa. It will discuss the challenges and opportunities of using AI in this context, and it will provide some recommendations for how AI can be used to improve the healthcare system in Africa.

A number of studies were conducted in different African regions, and they show that the issue of long queues has become a big problem in Africa. Cases have gone unreported of patients who have lost their lives in queues. With Africa having a large number of able-bodied people and a youthful population that can still provide services faster, this is unusual, and the issue has to be solved in order to ensure patient safety and improved care. This issue has proved to be a big problem, especially in public hospitals. However, with technology evolving, Machine Learning trained systems can help automate hospital systems, monitor queues, and reduce patient waiting times.

The use of artificial intelligence in hospitals has a number of advantages. It is a milestone toward solving most of the problems that hospitals are currently facing. With the advancements in information systems and technologies, intelligent devices with smart microelectronics, fast transmission, and network technologies are working together in healthcare systems and are playing a significant role towards a better quality lifestyle and improved healthcare services, which ultimately lead to a healthier life, This is called Medicine 4.0 (Taimoor, and Rehman, 2022)

Healthcare practitioners can employ artificial intelligence to relieve their onerous workloads, make their work flexible, and remove distance barriers between the patient and the health worker. Monitoring and caring for patients remotely using modern techniques such as IoT, cloud computing (CC), and artificial intelligence (AI) are evolving proposals for healthcare innovations. Through the use of AI, healthcare workers can monitor patients affected by different illnesses like heart disease, neurological sickness,

low blood pressure, low body temperature, chronic disease, diabetes, and obesity. This not only improves healthcare outcomes but also allows hospitals to be more organized and less crowded (Kantipudi, 2021). It also increases patient privacy and security.

The use of artificial intelligence in medicine has proven effective in China, proving that it is possible in Africa. The Beijing Hospital is using AI to create a virtual queuing system. This system will allow patients to check in online and receive updates on their wait time. The Shanghai Jiao Tong University Hospital is using AI to predict patient arrival times. This information is then used to optimize the hospital's staffing levels so that there are always enough doctors and nurses available to see patients. The Guangzhou Women and Children's Medical Center is using AI to create self-service kiosks. These kiosks will allow patients to check in, pay for their medications, and receive their prescriptions without having to interact with a human employee. All these are mechanisms that other continents are using to solve the issue of long waiting times in health centers.

The use of artificial intelligence in medicine is said to have had an impact at three levels; for clinicians, predominantly via rapid, accurate image interpretation; for health systems, by improving workflow and the potential for reducing medical errors; and for patients, by enabling them to access their own data to promote health (Topol, 2019)

Although the issue of long patient waiting times in hospitals has become a problem in Africa, research shows that African hospitals are also slowly advancing to use artificial intelligence. For example, the Mulago National Hospital in Uganda is using AI to predict patient arrival times. This information is then used to optimize the hospital's staffing levels so that there are always enough doctors and nurses available to see patients. The University of Ghana Medical School is using AI to develop a virtual queuing system. This system will allow patients to check in online and receive updates on their wait time. And the University of Nigeria Teaching Hospital is using AI to develop a system that will prioritize patients based on their medical needs. This system will help ensure that the most urgent cases are seen first.

AI has the potential to help address the problem of long patient waiting times in Africa. AI-powered models can be used to predict patient demand, allocate resources more efficiently, and identify patients who are at risk of waiting too long.

One way to use AI to manage patient waiting times is to develop a predictive model that can forecast patient demand. This model would analyze historical data on patient visits, as well as other factors such as weather and public holidays, to predict how many patients will need to be seen on a given day. This information could then be used to allocate resources more efficiently, such as by scheduling more doctors or nurses on days when demand is expected to be high.

Another way to use AI to manage patient waiting times is to develop a model that can identify patients who are at risk of waiting too long. This model would analyze patient data, such as their medical history and the severity of their condition, to identify patients

who are likely to wait longer than others. These patients could then be prioritized for treatment, which could reduce their waiting times.

AI has the potential to make a significant impact on the problem of long patient waiting times in Africa. By developing and deploying AI-powered models, healthcare providers can improve the efficiency of their systems and ensure that patients receive the care they need as quickly as possible.

As we have seen, long patient waiting times are a major problem in African hospitals. This can have a significant impact on patient's health and well-being, and it can also be a drain on healthcare resources. However, there is hope on the horizon. Artificial intelligence (AI) has the potential to help address this problem by providing healthcare providers with the tools they need to manage patient demand more effectively.

In conclusion, AI has the potential to be a powerful tool for managing patient waiting times in Africa. By developing and deploying AI-powered models, healthcare providers can improve the efficiency of their systems and ensure that patients receive the care they need as quickly as possible. This will have a significant impact on the health and well-being of patients, and it will also help to reduce the strain on healthcare resources.

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Audry Ashleen Chivanga is a writer, software engineering, and data analytics student and AI enthusiast who believes that prioritizing patient-centric care is crucial for resolving long queues in African healthcare systems. In her article, "Prioritizing Patient-Centric Care: Resolving Long Queues in African Healthcare Systems by Use of Artificial Intelligence," she explores how AI can be used to predict patient demand, allocate resources more efficiently, and identify patients who are at risk of waiting too long.