

Artificial Intelligence for Healthcare Equity in Low- and Middle-Income Countries: A Scoping Review of Applications, Challenges, and Future Directions Across Asia and Africa

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Abstract

Artificial Intelligence (AI) has become an emerging field with the potential to revolutionize the healthcare sector. Despite healthcare digitization, the problem of healthcare access inequalities still exists. For instance, in developing countries, there is often an insufficient number of skilled professionals and healthcare facilities, resulting in inadequate diagnosis, treatment, and healthcare access. Thus, the current paper examines the role of artificial intelligence in healthcare equality of the underserved population in Asia and Africa, based on a scoping review of AI-led healthcare studies and reports. The review aims to explore the possibilities of AI in transforming healthcare for the better in low-and middle-income countries and focus on how these solutions can be implemented in the context of social justice and health equity. The review follows the PRISMA-ScR guideline and includes the application of AI in diagnosis, telehealth, disease prediction and surveillance, patient monitoring, and healthcare management. The results of the research indicate that the implementation of AI in healthcare can make it more accessible and equitable by ensuring the early detection of diseases, providing access to remote healthcare, and optimizing treatment and management in both urban and low-resource settings. Nevertheless, there are several barriers to the adoption of AI in healthcare, including the lack of digital infrastructure and healthcare data and the ethical, regulatory, and technical challenges associated with the technology. Overall, the research identifies the key aspects of AI application in health care and emphasizes their importance in promoting healthcare equity in developing countries. The research contributes to the existing literature by providing a conceptual basis for addressing health disparities in low and middle-income countries (LMICs) through the lens of digital technologies. The study recommends that future interventions prioritize equitable, affordable, sustainable, and ethical healthcare through the implementation of AI technologies, algorithms, and programs.

Keywords

Artificial Intelligence, Healthcare Equity, Digital Health, Machine Learning, Healthcare Accessibility, Low- and Middle-Income Countries, Asia, Africa, Responsible AI.

1. Introduction

1.1. Background and Research Context

Healthcare inequality is one of the most pressing concerns in the context of social development. At the same time, despite the significant progress in medicine, technical equipment, technologies, and overall healthcare development, a considerable number of people still do not have equal access to the required treatment. Healthcare inequality can be caused by various factors such as an insufficient number of medical workers, lack of equipment, financial difficulties resulting from low income, bad geography of care services, and other causes. These

factors are particularly evident in the Global South and undermine social equality and economic growth [1].

The problem is especially acute in most Asian and African countries, as a significant part of the population and the number of diseases grow rapidly. The population in rural areas often suffers from long delays in receiving treatment, lack of access to qualified doctors, insufficient preventive care, and low levels of disease surveillance and control. This leads to an even greater gap between the healthcare outcomes of urban and rural populations, which constitutes a serious social and economic problem.

In recent years, artificial intelligence (AI) has become one of the most promising disciplines that can revolutionize healthcare delivery. In particular, machine learning (ML), deep learning (DL), natural language processing (NLP), and computer vision have empowered healthcare systems with the capacity to analyze valuable medical data, facilitate medical practice, enhance diagnostic accuracy, and personalize treatment recommendations. AI-enabled healthcare solutions have shown enormous potential in medical imaging, clinical trial design, medical record keeping, drug screening, remote patient monitoring, telehealth, and epidemiology [2].

Unlike many other conventional healthcare technologies, AI can be implemented in a way that extends the number of healthcare beneficiaries due to its virtual nature. For instance, diagnostic support software can be used by relatively underdeveloped areas that have fewer healthcare specialists and access to treatment. At the same time, virtual consultations can help bridge the gap between patients and medical workers in need of assistance. Finally, AI can be used in predictive systems to analyze the spread of diseases and epidemics for authorities and medical professionals [3].

The potential impact of AI on healthcare is especially interesting in view of the current state of affairs in the Asian and African countries [4]. Medical institutions in these areas are characterized by a relative lack of specialists, uneven distribution of healthcare professionals, an insufficient number of laboratories, and a large number of prevalent diseases. Therefore, the unique nature of these complications suggests that AI can be integrated into the system in a way to optimize processes and make them more cost-effective.

Nevertheless, despite the obvious benefits of implementing such technologies, it should be noted that at the moment AI-assisted treatment is at a relatively low level of development. Apart from obvious technical and economic challenges, such as the cost of technologies and the required technical expertise, there are also more specific challenges, such as privacy issues and adaptation to specific populations. Thus, one might argue that the current developments in healthcare AI are mostly relevant to high-income countries with advanced technical infrastructure. At the same time, populations in other parts of the world would likely benefit from the use of such technologies.

Therefore, it is necessary to assess the current state of affairs in Asian and African countries in view of the opportunities offered by AI. By analyzing the available opportunities, challenges, and benefits, it will be possible to determine how the rest of the world can approach the issue of equal healthcare access. Such considerations will be relevant to medical institutions, governments, corporations, and other entities.

1.2. Artificial Intelligence and the Transformation of Healthcare Delivery

Artificial intelligence (AI) is generally defined by a set of computer programs that emulate human intelligence functions, including learning, thinking, and even reasoning. Applied to healthcare, AI involves the use of medical records and other large sets of information, including genomic data, to improve diagnosis, enable new treatments, and help manage healthcare in general.

First, the most developed form of AI in medical practice is related to diagnosis, specifically image recognition. The latest achievements in convolutional neural networks allow such AI

programs as Google Health to operate at the level of professional doctors, analyzing x-rays, CT scans, and MRI pictures. Thus, it becomes possible to detect cancer, tuberculosis, cardiovascular diseases, eye diseases, and some other conditions [5]. For example, in developing countries, where the number of specialists is significantly lower than the number of cases, AI can be used to assist doctors and nurses in diagnosing patients. Second, AI can be used to predict future disease outbreaks and outcomes based on machine learning algorithms. Predictive healthcare is also an attempt to provide better service by evaluating risks and taking measures to avoid adverse outcomes. AI can be used in maternal health, infectious disease control, and various other areas, where predictive models can help allocate the limited resources efficiently [5]. It is particularly relevant to areas without proper healthcare infrastructure, where the prevention of individual cases and epidemics is of particular importance.

The ability to scale healthcare via telemedicine is also a significant advantage of using AI in developing countries. Being based on a mobile platform, AI can provide healthcare access to people who, for various reasons, cannot reach doctors and get treatment. Such an opportunity is more relevant to remote areas where transportation is expensive and time-consuming. Moreover, in addition to providing access to medical care, telemedicine can reduce expenditures on conventional healthcare.

Finally, another way AI can contribute to healthcare in developing countries is better disease surveillance and more efficient resource management. Being able to process large amounts of data, AI can be used to analyze the current state of health and forecast possible issues. It would allow health officials to respond faster to disease outbreaks and other emergencies and manage scarce resources more efficiently. However, it is important to remember that to improve healthcare in developing countries, AI must be carefully implemented with an emphasis on a local context. Thus, only properly developed and focused programs can address the serious challenges of global healthcare inequity and promote the well-being of the population.

1.3. Healthcare Challenges Among Unprivileged Populations in Asia and Africa

Asia and Africa are regions with the most substantial amount of both low and high levels of economic development, healthcare accessibility, and technological progress. Nevertheless, there are numerous health care issues in both continents that are common for many third-world countries.

The main problem with health care in Asia is the difference in accessibility between urban and rural areas. However, even in big cities, people may have difficulties with gaining access to health care services. Such countries as India, Bangladesh, Pakistan, Indonesia, and many others have serious issues with providing citizens with medical help, trained doctors, and modern equipment in both urban and remote areas [6].

The situation with health care in Africa is no better. The majority of African countries have issues with health care institutions and services. African countries do not have enough professional doctors and medical staff. Moreover, the population suffers from various diseases and lack of access to health care, especially in remote areas [7].

These issues are evident for populations with low incomes since they cannot afford private hospitals and clinics. People living in remote areas also do not have enough access to health care services because of the long distance to the nearest health care institution. Finally, poor countries also have problems with implementing new technologies in their medical institutions. Therefore, it may be concluded that the integration of technology in medicine is necessary but only if it is possible for the population to gain access to them.

However, there are still some issues with implementing artificial intelligence in medical institutions. It is vital to consider the population's characteristics, as in some countries, people may be suspicious of technology, thus refusing to use it. Technology may be applicable only if it considers the population's peculiarities and level of development.

1.4. Research Gap and Motivation

Although there have been some studies on the application of artificial intelligence (AI) in healthcare, limited research has focused on the relationships between adopting AI technologies and healthcare equity in developing countries. Previous literature has investigated healthcare issues in depth; however, most of the articles concentrate on performance, diagnostic accuracy, and operational efficiency. Little information is available on healthcare accessibility and affordability, inclusiveness, and implementation and sustainability challenges faced by the vulnerable populations.

First, there is a gap in terms of the focus countries of most of the studies conducted. Although there have been extensive studies on healthcare issues in developed and urbanized countries such as the United States, Europe, and East Asia, little is understood about healthcare problems and their solutions in developing countries.

Second, previous issues on healthcare and AI have concentrated on different topics related to the industry; however, none of them address the core issue of healthcare equity.

Third, there is a need for more research on the opportunities and threats of implementing AI in different social classes, as well as addressing the challenges that the third-world countries might encounter when adopting the technologies.

Fourthly, the last thing that needs to be addressed is how the researchers can help the developing world implement the technologies efficiently and ethically.

Therefore, based on the mentioned gaps, this research aims to investigate the role of artificial intelligence in promoting healthcare access and achieving equity in Asia and Africa's developing countries.

1.5. Research Objectives

This study aims to achieve the following objectives:

- Objective 1: To examine current applications of artificial intelligence in healthcare systems across Asian and African countries.
- Objective 2: To evaluate how AI technologies contribute to improving healthcare accessibility and quality among under served populations.
- Objective 3: To identify technological, ethical, economic, and institutional barriers affecting AI adoption in developing healthcare environments.
- Objective 4: To propose future strategies for achieving inclusive and sustainable AI-driven healthcare transformation.

1.6. Research Questions

Based on these objectives, this study addresses the following research questions:

- RQ1: What are the major artificial intelligence applications currently used in healthcare systems across Asia and Africa?
- RQ2: How does artificial intelligence contribute to improving healthcare access and reducing healthcare inequalities among disadvantaged populations?
- RQ3: What challenges hinder the implementation of AI-based healthcare solutions in developing countries?
- RQ4: What strategies can support responsible and inclusive AI adoption in resource-constrained healthcare systems?

2. Literature Review and Theoretical Foundation

2.1. Artificial Intelligence in Healthcare

The use of artificial intelligence in healthcare has led to the improvement of data analysis and clinical decision-making, disease prediction, and the personalization of treatment. The first AI applications were based on expert systems, but modern innovations allowed for exploring machine learning and deep learning, natural language processing, and other technologies to improve healthcare outcomes.

AI technologies can be used in medical imaging, disease diagnosis, drug discovery and development, patient care and monitoring, and medical management. In particular, the use of convolutional neural networks in medical imaging allowed for achieving promising results in cancer detection, tuberculosis, and diabetic retinopathy screening, among other applications. Therefore, the use of AI in healthcare is a great opportunity to transform medicine and provide better and more accessible healthcare services, especially in developing countries [8].

However, it is notable that the success of such technologies depends on existing data, infrastructure, and medical care systems and ethical considerations. Thus, there is a possibility that some AI technologies may not work in developing countries due to a lack of resources or experience.

2.2. AI Applications for Healthcare Equity

AI has a great potential to decrease healthcare disparities in underserved communities by improving access to care, its affordability, and efficiency.

AI-based diagnostic tools can be implemented to help medical professionals in remote areas that do not have access to medical specialists to quickly detect the disease and receive guidance on how to treat it. AI can also make telemedicine more efficient, thus connecting rural populations with doctors. Moreover, AI can predict and monitor various diseases and epidemics on a large scale.

The use of AI in telemedicine is especially promising in Asian and African countries due to the relative lack of health resources, an uneven distribution of medical professionals, and challenges in providing equal healthcare access. However, there are several barriers to implementing AI technologies in these regions, such as digital inequalities and privacy concerns, and threats of algorithmic bias and the challenges of technical expertise [9].

2.3. Healthcare Challenges in Asia and Africa

Many Asian and African countries suffer from healthcare disparities. The rural population of these regions has insufficient access to hospitals and medical or diagnostic centers. The healthcare system in Africa faces challenges with an inadequate workforce and various diseases, and the situation in Asia is no better, as many countries experience inequality in the distribution of healthcare services in urban and rural areas [10].

Meanwhile, AI can address some of these issues, offering solutions that go beyond hospitals and medical institutions. For example, countries such as India, Bangladesh, Kenya, Rwanda, and others are home to a number of successful examples of using artificial intelligence in medicine, diagnostics, and telemedicine [11].

2.4. Digital Health Equity Perspective

The idea of digital health equity requires that new technologies be accessible to every population category despite their social and economic status and the availability of medical care. Although the application of artificial intelligence is capable of reducing inequalities, the digital divide can be greater among different groups of the population due to unequal levels of access to technology, the Internet, and knowledge [12].

Consequently, the development of health-related artificial intelligence is necessary in the context of healthy societies based on considerations of social responsibility and community engagement, taking into account local health needs, representative and diverse data sets, ethical governance, affordability, and sustainability.

2.5. Research Gap

Although some of the reviewed articles discuss artificial intelligence in healthcare, most of them address the topic in developed healthcare systems. The role of technology in promoting health equity in underserved populations in Asian and African communities is poorly understood and needs further discussion.

Therefore, this article will explore the issues of artificial intelligence in medicine, its barriers, and opportunities for future research in detail.

3. Methodology

3.1. Research Design

This study employed a scoping review methodology to explore the role of artificial intelligence (AI) in enhancing healthcare access for underserved populations in Asian and African countries. The use of this methodology was justified by its capacity to identify, categorize, and synthesize the available evidence in the domain of digital health as well as the role of medical AI, healthcare access, and related implementation issues.

The review followed the PRISMA-ScR (Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews) (protocol to guide the conduct and reporting of this study).

3.2. Literature Search Strategy

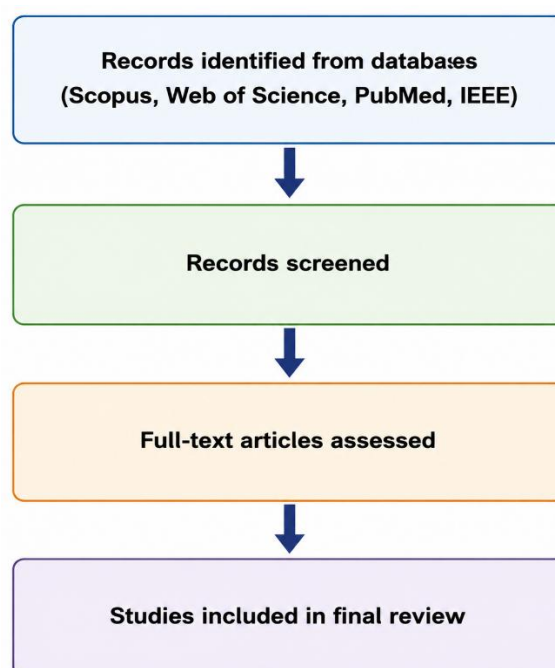


Figure 1. PRISMA Flow Diagram of Study Selection Process

Figure 1 below represents the process of conducting the study that includes the identification, screening, selection, and extraction of data from the articles. First, the articles were identified by conducting a literature search in different databases, namely Scopus, Web of Science,

PubMed, and IEEE Xplore. Second, the screened articles were sorted according to the inclusion and exclusion criteria. Third, the studies were included in the final qualitative synthesis.

A comprehensive literature search was conducted using major academic databases, including:

- Scopus
- Web of Science
- PubMed
- IEEE Xplore
- ScienceDirect
- Google Scholar

The search strategy was developed by combining search terms related to the topic of artificial intelligence, healthcare, and developing countries.

Some of the search terms that were used are as follows: (“Artificial Intelligence” OR “Machine Learning” OR “Deep Learning”), (“Healthcare” OR “Digital Health” OR “Medical Technology”), and (“Asia” OR “Africa” OR “Low- and Middle-Income Countries” OR “Under Served Population”).

Only the articles published in English and addressing the topic of artificial intelligence in healthcare were included.

3.3. Inclusion and Exclusion Criteria

Table 1. Inclusion and Exclusion Criteria

Criteria	Included	Excluded
Publication type	Peer-reviewed journals	Conference abstracts
Language	English	Non-English
Topic	AI in healthcare	AI unrelated to healthcare
Region	Asia and Africa	Other regions
Population	Underserved communities	General populations

Inclusion Criteria

Studies were included if they:

- Focused on AI applications in healthcare.
- Examined populations in Asian or African countries.
- Discussed healthcare accessibility, quality improvement, or health equity.
- Were published in peer-reviewed journals.
- Provided empirical findings or systematic evidence.

Exclusion Criteria

Studies were excluded if they:

- Focused only on AI technology development without healthcare applications.
- Were unrelated to Asian or African healthcare contexts.
- Were conference abstracts, editorials, or non-academic articles.
- Did not provide sufficient methodological information.

3.4. Data Extraction and Analysis

Relevant information was extracted from selected studies, including:

- Country and region
- AI technology used
- Healthcare application area

- Target population
- Reported benefits
- Implementation barriers

The extracted data were analyzed using thematic analysis to identify major patterns related to AI applications, healthcare improvements, and adoption challenges.

3.5. Conceptual Framework Development

Based on the reviewed literature, the current study proposed a conceptual framework that reveals the mechanisms by which AI can promote healthcare equity. Fig. 1 below represents the conceptual framework developed for the study. The diagram below indicates the role of artificial intelligence technologies in promoting health care equity among the underprivileged population in Asian and African countries. The framework shows the connection between AI technologies and healthcare applications, as well as the relationship between healthcare applications and social outcomes. The diagram indicates that solutions such as AI-assisted diagnosis, telemedicine, disease prediction, and health monitoring can promote healthcare equity. Additionally, the framework shows that factors such as digital infrastructure, data, health human resources, governance, ethics, and partnerships are integral to the success of AI solutions in promoting health care equity.

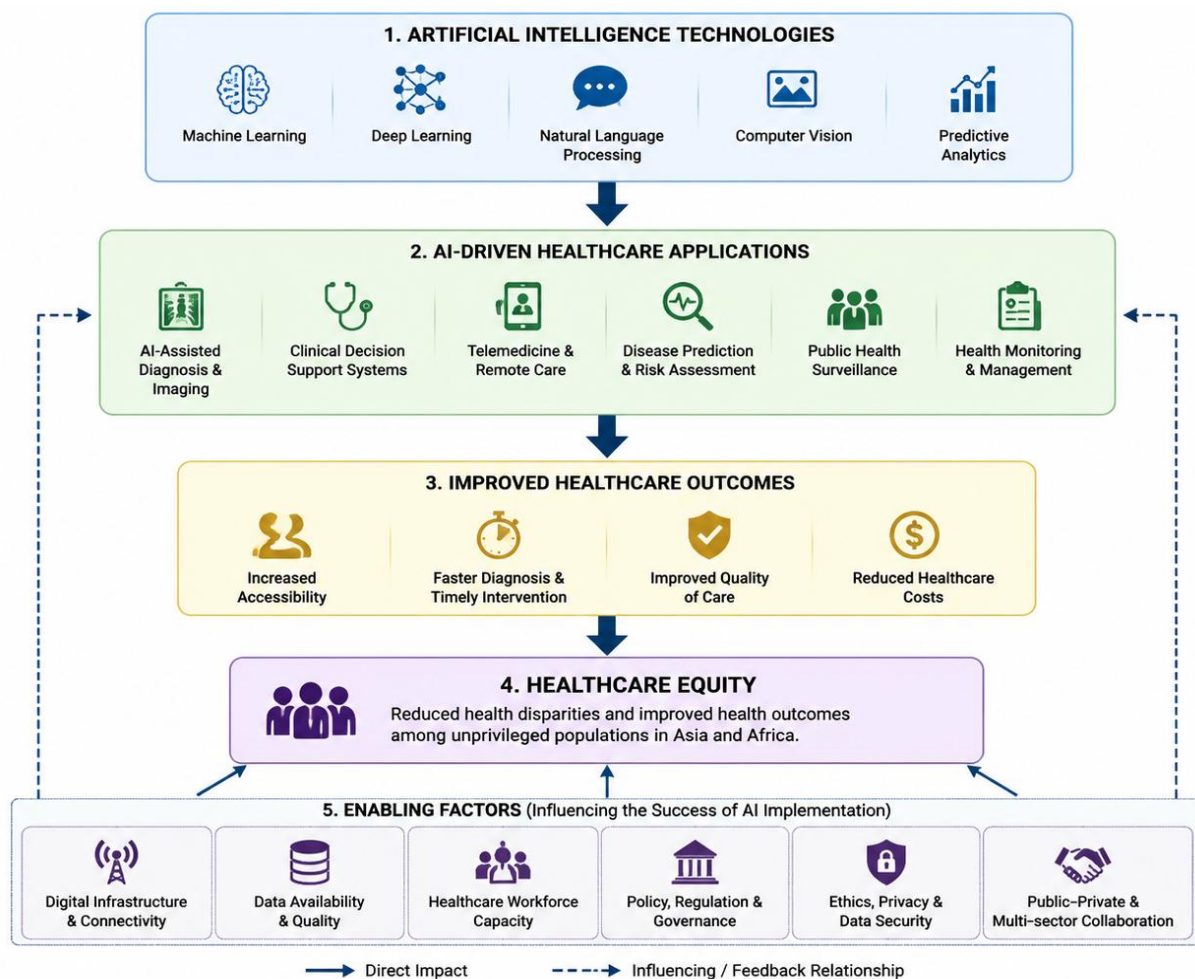


Figure 2. Conceptual Framework for AI-Enabled Healthcare Equity in Asian and African Nations

Figure 2 below represents the conceptual framework of the study that connects AI to healthcare equity in unprivileged populations in Asian and African countries. The framework below indicates that artificial intelligence can promote health care equity through AI-assisted diagnosis, clinical decision support, telemedicine, disease prediction, and health monitoring. The applications above enhance healthcare accessibility, diagnostic speed and accuracy, quality of care, and lower treatment costs. Moreover, the diagram below suggests that promoting healthcare equity through AI requires a comprehensive approach in which these factors are considered.

3.6. Methodological Limitations

The study has several limitations, including the fact that data was obtained from publications in English only, thus excluding local and possibly relevant non-English sources, and that the researchers were unable to analyze the differences between the healthcare systems, AI maturity, and data infrastructure in the countries studied. The data provided should be validated by researchers on a larger scale and in different settings.

4. Results and Findings

4.1. Overview of AI Applications in Healthcare Among Underserved Populations

The reviewed articles highlight artificial intelligence's (AI) potential to improve healthcare access and quality in low-resource settings through its use in medical diagnostics, telemedicine, disease prediction, and health-care management. In Asian and African countries, the use of AI is primarily focused on these spheres.

The reviewed articles suggest that the integration of AI into health-care systems can address numerous challenges associated with the current health care access and quality status in many low-and-middle-income countries. At the same time, they demonstrate that the benefits of AI are not fully realized across different populations due to varying levels of technological development and health care accessibility.

4.2. AI Applications in Healthcare Systems

The reviewed articles revealed that the application of artificial intelligence in healthcare could be clustered into a few themes, namely, AI-assisted diagnosis, telemedicine, disease prediction, health monitoring, and healthcare management. Among these themes, diagnostic support and telemedicine were the most common research topics. The former was thought to help bridge the gap in providing healthcare access in developing countries, while the latter offered remote medical services to patients who could not go to hospitals.

Table 2. Major AI Applications for Improving Healthcare Access in Asia and Africa

AI Application	Healthcare Function	Benefits for Underserved Populations
AI-assisted diagnosis	Medical image analysis and disease detection	Faster diagnosis and reduced dependence on specialists
Telemedicine and virtual healthcare	Remote consultation and patient support	Improved healthcare access in rural areas
Disease prediction models	Risk assessment and early intervention	Prevention and timely treatment
AI-based health monitoring	Patient tracking and chronic disease management	Continuous healthcare support
Public health surveillance	Disease outbreak prediction and monitoring	Improved emergency response

Figure 3 below indicates the distribution of the most common applications of artificial intelligence in health care identified in the research. It can be observed that the largest proportion of studies are devoted to AI-assisted diagnosis, followed by telemedicine, disease prediction, health monitoring, and healthcare management. The applications of artificial intelligence in health care address the most urgent problems facing patients in need of medical assistance in Asian and African countries.

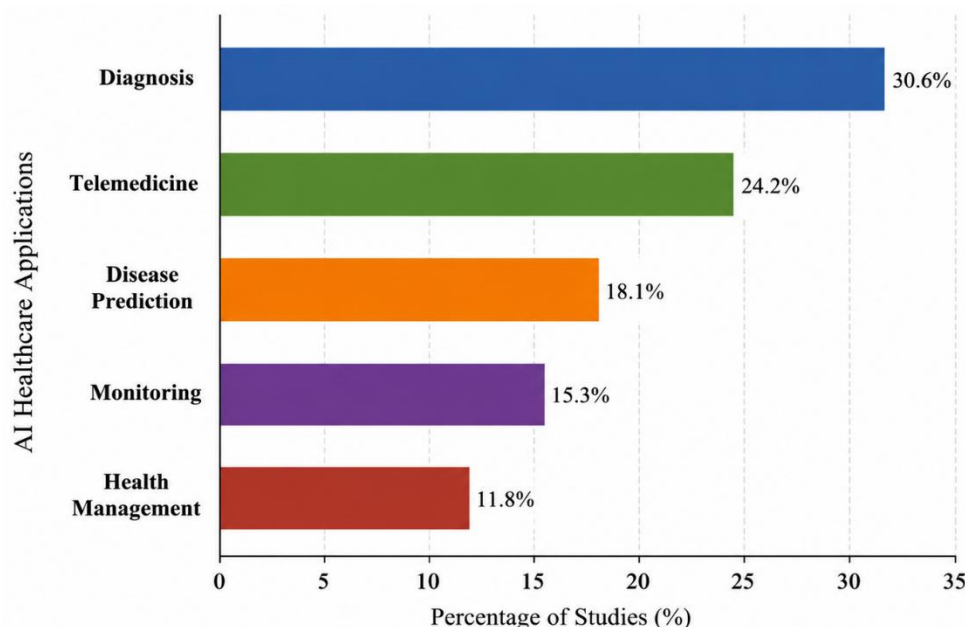


Figure 3. Distribution of AI Healthcare Applications

4.3. AI-Assisted Diagnosis and Clinical Decision Support

One of the areas where AI is being widely explored for creating better healthcare systems in the future is automated diagnosis. AI-driven diagnosis tools, such as the deep learning software, have already proven to be effective in scanning images and detecting diseases at an early stage. AI systems can be used in areas where there is a shortage of medical professionals, as tools for the first line of diagnosis. In diseases like tuberculosis, cancer screenings, eye diseases, and cardiovascular problems, AI has shown its ability to be an important part of medical services, helping to provide timely diagnoses and treatment.

One of the biggest benefits of implementing AI-driven diagnosis in low-resource areas is bringing the quality of care outside the big hospitals and into the local communities. However, for such an approach to be successfully implemented, proper medical data collection, and testing of tools within the local medical environment, are required.

4.4. AI-Enabled Telemedicine and Remote Healthcare Delivery

Telemedicine, in particular the one based on artificial intelligence (AI), seems to be the way to provide better healthcare access for people living in remote areas. Such a solution is urgently needed in many Asian and African countries as people there are often forced to make long trips to the nearest health facilities.

AI-powered telemedicine platforms provide:

- Remote medical consultations
- Automated symptom assessment
- Patient monitoring
- Health information services

These solutions provide an opportunity for patients to receive an initial medical diagnosis without going to the hospital. Such options are actively being considered in countries with extensive rural areas, where access to health care services remains a major problem. For example, India, Bangladesh, Kenya, and Indonesia are investing in developing virtual health assistants to help treat the population in remote areas.

Despite the efforts of governments, internet access, smartphones' widespread adoption, and digital literacy remains a challenge.

4.5. AI-Based Disease Prediction and Public Health Management

AI predictive analytics proved its effectiveness in healthcare in terms of improved planning and disease prevention. The technology allows for analyzing vast amounts of data and detecting patterns that could be applied in recognizing diseases and making projections.

In developing countries, these capabilities are particularly valuable for:

- Infectious disease monitoring
- Epidemic forecasting
- Maternal healthcare risk prediction
- Resource allocation

Public health systems based on artificial intelligence can make governments and medical institutions more responsive to health emergencies. At the same time, the issue of data quality and security cannot be overlooked, especially in third-world countries with just-burgeoning information technology infrastructure.

4.6. Comparative Experiences Between Asia and Africa

The adoption of AI healthcare solutions demonstrates both similarities and differences between Asian and African nations.

Table 3. Comparison of AI Healthcare Development in Asia and Africa

Aspect	Asian Nations	African Nations
Main Healthcare Challenges	Rural healthcare gaps, population density, unequal medical access	Healthcare workforce shortage, limited infrastructure, infectious diseases
Common AI Applications	Medical imaging, telemedicine, digital health platforms	Disease surveillance, mobile health, remote consultation
Key Advantages	Large digital markets and increasing technology adoption	Strong potential for mobile healthcare solutions
Major Barriers	Unequal digital access and healthcare disparities	Infrastructure limitations and limited technical expertise

The findings suggest that AI adoption strategies should be adapted according to local healthcare conditions rather than applying identical models across different regions.

4.7. Key Findings Summary

The results reveal five major findings:

- First, AI technologies can significantly improve healthcare accessibility by extending medical support to under served communities.
- Second, AI-assisted diagnosis and predictive healthcare applications demonstrate the greatest potential impact in resource-limited settings.
- Third, telemedicine combined with AI provides effective solutions for overcoming geographical healthcare barriers.

- Fourth, successful AI implementation depends on supporting factors such as infrastructure, healthcare workforce capability, data availability, and governance.
- Fifth, AI should be developed using an inclusive approach to ensure that technological advancement reduces rather than increases healthcare inequality.

5. Discussion

5.1. The Role of AI in Reducing Healthcare Inequality

The results of this study indicate that AI can be transformative for healthcare in under privileged populations in Asian and African countries. These technologies can help address the gap in the availability and accessibility of healthcare. Compared to the traditional healthcare model, which is dependent on the infrastructure and personnel available, AI can bring healthcare to the doorstep of the people.

Healthcare systems based on AI can overcome the limitations of location and availability of professionals. Thus, solutions like diagnosis, telemedicine, and predictive analytics have the potential to make an incredible difference in the healthcare landscape of developing countries. However, it is important to understand that AI should not replace the healthcare workers. Rather it should be used to supplement their work and make them more effective in their jobs.

5.2. Implications for Asian and African Healthcare Systems

The experience of Asian and African countries shows that there are various ways of AI development, which are connected with the specific peculiarities of healthcare in these countries.

For example, in Asian countries, smartphones and other digital technologies have become widely used, and investment in technology development has increased. The use of AI in medical practice, including computer vision, has made it possible to find solutions to problems of medical care for a huge population.

In Africa, the use of information technology in medical practice is more limited, but AI can help to solve acute problems of the lack of health care. The use of mobile technologies, computer vision, and telemedicine can provide a solution to the acute shortage of medical staff and unequal access to care.

This comparison shows that it is necessary to develop healthcare policies in each country taking into account its specific features and problems.

5.3. Challenges Limiting AI Healthcare Adoption

Although AI provides significant opportunities, several challenges may prevent its successful implementation in under served regions.

- **Data Availability and Quality:** AI systems require large and diverse datasets to achieve reliable performance. However, many developing countries lack comprehensive electronic health records and standardized healthcare databases. Limited representation of local populations in AI training datasets may also increase algorithmic bias and reduce effectiveness.
- **Digital Infrastructure Limitations:** Reliable internet connectivity, electricity supply, and technological equipment remain major challenges in many rural areas. Without sufficient infrastructure, even advanced AI solutions may fail to reach the populations that need them most.
- **Ethical and Privacy Concerns:** Healthcare AI involves the processing of sensitive patient information. Concerns related to data privacy, cybersecurity, informed consent, and responsible data management must be addressed to maintain public trust.

- **Human Capacity and Skills:** Successful AI implementation requires healthcare workers who understand how to use and interpret AI systems. Investment in education, digital skills training, and interdisciplinary collaboration between healthcare professionals and technology experts is necessary.

5.4. Policy and Practical Implications

The results of the study offer several implications for policymakers, healthcare providers, and technology developers.

First, the government should formulate national strategies for AI in healthcare that prioritize healthcare equity over technological innovation and ensure that the needs of rural and disadvantaged populations are considered.

Second, investments in digital infrastructure are needed to create an ecosystem conducive to adopting AI in healthcare.

Third, international collaborations among governments, academic institutions, healthcare organizations, technology companies, and other stakeholders should be pursued to facilitate knowledge-sharing and technology transfer.

Fourth, ethical governance of AI in healthcare should be ensured, including transparency, accountability, and fairness in deployment and decision-making.

5.5. Theoretical Contributions

This study adds value to the existing research by exploring the intersection between artificial intelligence innovations and health care equality in the context of developing countries.

The prior research reports mostly emphasize AI's role in performance improvement, technology development, and clinical outcome validity. As opposed to the common ground of many previous studies, which mostly consider AI's effect on health care from the perspective of technological sophistication, this research's theoretical basis also takes into account the importance of promoting health equity through AI technology by postulating the idea of the importance of coexisting enablers.

5.6. Future Directions

Future AI healthcare development in Asia and Africa should focus on several priorities:

- (1) Development of locally adapted AI models: AI systems should be trained using diverse datasets representing local populations, diseases, and healthcare environments.
- (2) Expansion of affordable AI healthcare solutions: Low-cost and scalable technologies should be prioritized to ensure accessibility among disadvantaged communities.
- (3) Strengthening AI governance frameworks: Clear policies regarding ethics, privacy, security, and accountability are required.
- (4) Building healthcare AI capacity: Training healthcare workers and researchers will improve effective AI adoption and long-term sustainability.

5.7. Discussion Summary

In general, AI is a great opportunity to ensure health care equality in Asian and African countries through its capacity to improve diagnosis, increase accessibility to health care, and affect health care decisions. However, there are some challenges that should be considered before implementing these technologies in the health care system, such as infrastructural, ethical, data availability, and workforce issues.

The future of healthcare will be determined by whether these technologies are used to promote equity by being designed to meet the needs of the underserved population.

6. Conclusion

Artificial intelligence technologies have the potential to become an essential tool in reducing healthcare inequalities in Asian and African countries. The article states that the application of AI technologies, such as AI-assisted diagnosis, telemedicine, disease prediction, and monitoring systems, leads to increased healthcare access and improved health outcomes through more efficient healthcare provision, expanded healthcare access, and enhanced healthcare worker performance.

The study revealed that the use of artificial intelligence tools is of particular interest in the context of medical service availability, since it allows overcoming many of the disadvantages of the regional healthcare system. At the same time, the research results show that to achieve the desired level of healthcare quality, technical, social, and institutional infrastructure, ethical considerations, health data quality, an adequate workforce, and strategic global health organizations' engagement are necessary.

The study underlines the need for appropriate AI-based approaches and strategies for reducing medical care inequalities in the studied countries. The paper argues that future AI healthcare advances should focus not only on technology but also on values to ensure that healthcare technology innovations lead to cost-effective, accessible, equitable, and sustainable outcomes. Moreover, the authors emphasize the importance of ensuring that AI healthcare technologies reduce inequities for underserved and vulnerable populations. Overall, the article suggests that when considering artificial intelligence as a way to improve healthcare outcomes, it is essential to remember its potential to enhance healthcare access and promote health equity.

6.1. Research Limitations and Future Research Directions

The current study has a number of limitations, which need to be considered while interpreting the findings. Firstly, the review was limited to the inclusion of the articles published in English language only, which might be considered as a significant limitation. The articles published in local languages were excluded from the current study. Besides, the healthcare system and the level of adoption of AI technologies in Asian and African countries can differ, which restricts the possibility of comparison between these regions. Moreover, most of the included studies are on an experimental level, which does not provide sufficient data on the long-term benefits and effects of various AI technologies.

Further research should include country-specific analyses aimed at evaluating the effectiveness, cost-efficiency, and sustainability of applying AI healthcare technologies. In addition, future studies should consider community engagement in-depth, as well as ethical concerns and the creation of country-specific AI technologies.

6.2. Final Contribution Statement

It should be mentioned that the present study makes an important contribution to addressing health care in digital health literature because it provides an in-depth understanding of how artificial intelligence can promote health care equity in developing countries. Compared to other studies, this article focuses more on social, economic, and institutional factors determining the effective development and implementation of AI.

The study can help various stakeholders, including policymakers, healthcare providers, and researchers, operate more efficiently in Asian and African countries. The findings offer a conceptual basis and critical perspective for further studies and experiments aimed at accomplishing sustainable and equitable AI-guided health care in underdeveloped states.

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