**Public Health Institutes of the World**
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# Webinar
# 'Artificial Intelligence and Public Health'

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## PANELISTS

### MODERATED BY

The application of AI in Mathematical modeling for public health interventions

**Mr Abel W. Walekhwa**
Director, IDEMU Mathematical Modeling Unit, Uganda

Application of AI in Infectious Disease Surveillance and Early Warning in China

**Prof. Zhihang Peng**
Deputy Director of Information Center, Chinese Center for Disease Control and Prevention, China

AI and Global Health Inequality

**Dr. Homoud Algarni**
Global Health Senior Expert, Public Health Authority, Saudi Arabia

**Dr. Muhannad Sulaiman Aloraini**
Public Health Academy Director, Public Health Authority, Chair of the IANPHI Asia Network, Saudi Arabia

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# Dr. Muhannad Aloraini

Public Health Academy Director, Public Health Authority, Chair of the IANPHI Asia Network, Saudi Arabia

# Introduction

# AI and Global Health Inequality
# How Can AI Help Bridge Gaps in Healthcare Access and Quality?

# Contents

# 01

## Introduction

# Explanation of the problem of global health inequality

## Global health inequality

Global health inequality refers to the disparities in healthcare access and quality among different regions and populations around the world.

According to the World Health Organization (WHO), around half of the world's population still lacks access to essential healthcare services.

Data shows that low- income countries and marginalized communities often face higher rates of mortality and morbidity due to lack of access to adequate healthcare.

## Examples of health inequality and its impact on society

Health inequality can be seen in various aspects, such as disparities in life expectancy, disease prevalence, and healthcare outcomes.

For example, in many developing countries, maternal and child mortality rates are significantly higher compared to developed nations.

The impact of health inequality goes beyond individual suffering and affects societal development, economic productivity, and overall well- being.

# Role of AI in solving global health inequality

## 01.

### AI and its capabilities

- AI has the potential to analyze vast amounts of data, identify patterns, and make predictions or recommendations based on that data.
- By leveraging AI technologies, healthcare systems can address the challenges related to health inequality by improving access and quality of care.

## 02.

### Advantages of AI in healthcare

- AI enables early detection and diagnosis of diseases, leading to timely treatment and improved outcomes.
- With AI- powered vaccine development, researchers can identify potential candidates more efficiently and accelerate the vaccine creation process.
- AI facilitates telemedicine and remote care, allowing patients in remote or underserved areas to access healthcare services without needing to travel long distances.

02

Applications of AI in Health Inequality

# Disease Prevention

## 01.

### Early detection and diagnosis using AI

AI can analyze medical images, such as X- rays or MRIs, to identify early signs of diseases, including cancer, cardiovascular diseases, and infectious diseases.
By detecting diseases at an early stage, healthcare providers can intervene promptly and prevent further progression or complications.

## 02.

### AI-based vaccine development

AI techniques, such as machine learning, can analyze large datasets to identify patterns and predict the effectiveness of potential vaccines.
This helps researchers prioritize vaccine candidates and speed up the development process.

# Healthcare Access

## Telemedicine and remote care using AI

AI- powered telemedicine platforms enable remote consultations, diagnosis, and treatment, improving access to healthcare for individuals in remote or underserved areas.
Patients can connect with healthcare providers through video calls and receive medical advice without the need for in- person visits.

## AI-based mobile health solutions for rural areas

Mobile health solutions, combined with AI technologies, can provide healthcare information, preventive care reminders, and disease management support through mobile apps.
This benefits individuals in rural areas who may have limited access to healthcare facilities.

# Cost Reduction

## Predictive analytics for medical equipment maintenance

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AI can analyze data from medical equipment to predict maintenance needs and prevent equipment failure.
This reduces downtime, optimizes resource allocation, and ultimately lowers healthcare costs.

## AI-based drug discovery and development

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AI can analyze vast amounts of biomedical data to identify potential drug candidates, predict their efficacy, and accelerate the drug discovery process.
This can lead to more efficient and cost- effective drug development, making medications more accessible to underserved populations.

# 03

## Challenges and Limitations of AI in Health Inequality

# Technical limitations

## Artificial intelligence limitations

- AI are only as reliable as the data they are trained on. Biased or insufficient data can lead to inaccurate predictions or diagnosis.
- Developing AI algorithms requires significant resources, expertise, and computational power, which may not be readily available in all healthcare settings.

## Data bias and unavailability

- Availability of comprehensive and representative health data is crucial for training AI models. However, such data may be limited, especially in low-resource settings.
- Data bias can also be a challenge, as AI algorithms may generalize from biased data and perpetuate existing healthcare disparities.

# Ethical considerations

## Lack of human interface, empathy, and care

- AI systems lack human emotions, empathy, and the ability to provide personalized emotional support or comfort to patients.
- The impersonal nature of AI- driven healthcare can impact patient satisfaction and overall quality of care.

## Fairness and transparency in AI-based healthcare

- Ensuring the fairness and transparency of AI is crucial to prevent biases and discriminatory outcomes.
- Healthcare organizations must establish ethical guidelines and regulations to ensure AI technologies are deployed equitably and with transparency.

# Implementation challenges

## Infrastructural limitations

AI- driven healthcare often requires reliable internet connectivity, advanced medical equipment, and trained personnel, which may not be available in all regions.
Insufficient infrastructure can hinder the adoption and effectiveness of AI- based healthcare solutions.

## Policy and regulatory frameworks

The deployment of AI technologies in healthcare necessitates clear policies and regulations to address ethical concerns, privacy issues, and data protection.
Governments and regulatory bodies need to establish guidelines that ensure responsible and ethical use of AI in healthcare.

05

Future of AI in Health Inequality

# Advancements in AI capabilities

## 01

### Improved accuracy and efficiency in AI algorithms

Continued advancements in AI and machine learning techniques will enhance their accuracy and efficiency in healthcare applications.
This will lead to more precise disease detection, personalized treatment recommendations, and improved patient outcomes.

## 02

### Integration of AI with other emerging technologies

Integration of AI with other emerging technologies, such as wearable devices, will enable real- time monitoring of patients' health conditions.
This integration will facilitate early intervention and preventive care, further bridging gaps in healthcare access and quality.

# Policy and Regulatory Support

## Encourage collaborations and partnerships

Governments, healthcare organizations, and technology companies should collaborate to share resources, knowledge, and expertise in AI-driven healthcare.
Encouraging partnerships will enhance innovation and ensure the equitable distribution of AI- based health solutions.

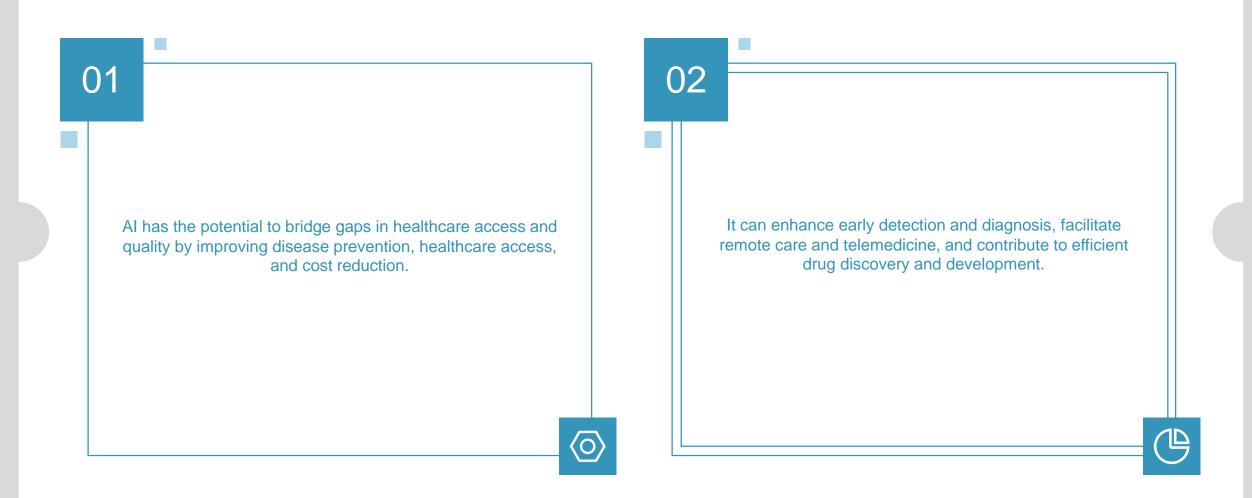## Establish ethical and regulatory standards for AI-based healthcare

Establishing ethical guidelines and regulatory standards is essential to address concerns related to data privacy, accountability, and fairness in AI- driven healthcare.
Policymakers should work towards creating frameworks that ensure responsible and equitable use of AI technologies in healthcare.

06

Conclusion

# Recap of the importance of AI in solving global health inequality

## 01

AI has the potential to bridge gaps in healthcare access and quality by improving disease prevention, healthcare access, and cost reduction.

## 02

It can enhance early detection and diagnosis, facilitate remote care and telemedicine, and contribute to efficient drug discovery and development.

# Potential future impact and role of AI in healthcare

Continual advancements in AI capabilities hold the promise of further reducing global health inequality.

Integrated with other emerging technologies and supported by appropriate policies, AI can revolutionize the healthcare landscape and improve health outcomes for all.

# Discussion

**Examples of AI-based Health Inequality Solutions in your countries, what is the results and the challenges?**

# Thanks