Comprehensive Review of Universal Challenges in Public Health and Medicine

Rakan Abdullah Mohammed Al muhri[1], Jamilah Mubarak Saad Al yami[2], Mahdi Saleh Mahdi Al sharyah[3], Saleh Ali Al Sharyah[4], Ali Jarallah Atran Alyami[5], Farhan Yahya Alsalem[6], Taleb Yahya Alsalem[7], Salem Ali Alyami[8], Saleha Saeed Marzouq Alyami[9], Yousef Ahmad Mohammd Al-lajam[10]

Abstract

Education is considered one of the basic human needs; thus, public health and medicine are essential to human lives, while both fields have common issues. So, major trends in healthcare systems are observed: uncertainties and changes that may occur, the burden of diseases and demographics, and health inequity remain today's major points of reference' in global health. This review outlines some of the major generalizable issues of concern in global public health and medicine, namely, emerging infectious and chronic diseases, health disparities, health systems, and climate change. Based on literature from diverse parts of the world, this review discusses the present state of the nation's health systems and their capacity to meet these challenges. Further, it explores the role of international partnerships, policy changes, and technology development in managing such crises. One is aimed at health equity for all citizens of society's countries, and another focuses on international cooperation and sustainable health care for all.

Keywords: *Public Health; Global Health; Healthcare Access; Epidemiology; Disease Prevention; Healthcare Inequality; Health Systems; Mental Health; Infectious Diseases; Non-Communicable Diseases; Health Policy; Universal Healthcare.*

Introduction

Public health and medicine, while separate branches of service provision, are intertwined and, together, are the foundational aspects of the healthcare sector worldwide today. Public health is, therefore, the science and art of preventing disease, promoting health, and prolonging survival without accommodating the individual patient. While surgery is the science dealing with cuts and operations on people, medicine is the art of healing the sick. Even though they work at different tiers, one is tackling population health concerns while the other is a human population-based field; the two fields are becoming melded as global health concerns progress (Omotayo & Shittu, 2019; Mohammad et al., 2022; Al-Husban et al., 2023).

Among the extreme challenges in global health are the increasing disparities, such as inequality in the access to and utilization of health care services. Whereas most developed countries have well-established quality health facilities in a position to respond to a wide range of health needs, most low—and middle-income countries face significant hurdles to even basic health care. These have been compounded by globalization; for instance, emerging and re-emerging diseases have grown fast, as has the development of resistant types of diseases and new types of pathogenic organisms.

With participation in activities becoming universal, the concern of this review is to explore these challenges, their root causes, and possible remedies. The issues presented in this review, such as disease burden, healthcare infrastructure inequalities, mental health, and climate change, suggest the need for a multi-

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[1] Ministry of Health, Saudi Arabia; raalmuhri@moh.gov.sa.
[2] Ministry of Health, Saudi Arabia; Jamilahma@moh.gov.sa.
[3] Ministry of Health, Saudi Arabia; Msalsharyah@moh.gov.sa.
[4] Ministry of Health, Saudi Arabia; saalalsharyah@moh.gov.sa.
[5] Ministry of Health, Saudi Arabia; agaleami@moh.gov.sa.
[6] Ministry of Health, Saudi Arabia; faalsalem@moh.gov.sa.
[7] Ministry of Health, Saudi Arabia; talsalem@moh.gov.sa.
[8] Ministry of Health, Saudi Arabia; Salyami50@moh.gov.sa.
[9] Ministry of Health, Saudi Arabia; Salyami15@moh.gov.sa.
[10] Ministry of Health, Saudi Arabia; yal-lajam@moh.gov.sa.

faceted, interrelated international health perspective. This paper discusses mitigating these challenges within nations, the healthcare systems, and international organizations regarding global health among nations.

Methods

This systematic review was done for literature, reports, and data from various health organisations, including but not limited to the World Health Organization (WHO), the Centre for Disease Control (CDC), and various countries' ministries of health. This study explored current trends, healthcare policies, and disease burdens worldwide and used input from peer-reviewed medical and public health journals. Moreover, global health estimates prepared by the WHO were employed to compare the effects of different diseases and outcomes of interventions.

This review also involves a comparative review of how various healthcare systems respond to public health disasters. The specific branch compares the ratio between high-income and low-income countries regarding healthcare, healthcare facilities, and diseases. Quantitative data were used about the overall disease load, degree of people's access to care, and impact of various forms of interventions based on data collected about particular health threats identified in case studies (including the Ebola outbreak, the emergence of COVID-19 disease, and growing concern about non-communicable diseases).

Results

Disease Burden

The double burden of communicable and non-communicable diseases is the top threat to health worldwide. Similarly, although mentioned earlier as a major problem, many infectious diseases have been partially averted by vaccination coupled with better hygiene in many nations. However, new diseases have only appeared, and antimicrobial resistance is bringing the threats to public health back(Omotayo & Shittu, 2019; Alzyoud et al., 2024; Alolayyan et al., 2024).

The COVID-19 pandemic demonstrated that worldwide populations remained very susceptible to infectious diseases. The pandemic brought out the deficiencies, particularly in the fragile health systems in most developing nations. Even though the vaccination exercise has begun, the availability of vaccines in the developing world, compared to the developed nations, remains a challenge.

Apart from infectious diseases, NCDs have become the number one killer across the world today. Chronic diseases, including cardiovascular diseases, diabetes, and cancer, are today's leading disorders in most developed countries, and the incidence of these diseases is steadily increasing in developing and middle-income countries. Major risks, including an unhealthy diet, a lack of physical activity, smoking, and environmental pollution, put increasing pressure on NCDs.

Health Inequality

Sensitive health disparities are arguably one of the most undesirable barriers to realizing equal health chances. Presently, variations in demography, such as life, mortality, prospects of getting treated, and the rate of illness, either infective or chronic form, differ across several countries. Such disparities are caused by social determinants of health SDOH, such as income, education, employment, housing, and support systems.

Low income and poor health systems in many countries contribute to these poor health indicators. For instance, the proportion of mothers who may die in sub-Saharan Africa is still very high; however, there has been a generally perceived enhancement in maternal well-being in the developed countries. However, there are variations in the distribution of health indicators depending on whether or not a country is classified as a high-income country and its within-country poverty rates, race, and place of residence.

There are disparities in healthcare accessibility that are strongly linked to these disparities. He also notes that an absence of proper healthcare necessitates funding for persons who may otherwise die due to a lack of adequate medical attention in first-world countries that lack a proper healthcare delivery system. Although free health coverage is available in some countries, such as the developed world, barriers like long waits, poor staffing in clinics, hospitals, and other facilities, and congestion in hospitals reduce equal access to health services.

Healthcare System Challenges

Many countries are experiencing several problems, such as limited resources, increased demand for health care, and the development of demographic characteristics. The fairly developed and developing countries' health systems are arguably among the greatest global health issues. Many pieces of evidence show that countries from the Scandex and others from the North and West of Europe can afford free healthcare services for their populations. On the other hand, low-income countries, as the name suggests, many of these countries often lack the finances to adequately fund, equip, and staff hospitals, clinics, pharmacies, and other healthcare centers to even a basic standard.

Besides, many countries lack healthcare workers, especially in districts and regions where they are needed the most. Global demand for healthcare services is fuelled by the increasing aging population and the trend towards more chronic conditions. The deficit of human capital in developing countries is complemented by the outflow of healthcare staff to countries with higher living standards.

In addition, the question of how health care costs will be paid remains a question mark. Many countries have introduced national health insurance or other universal health care coverage; however, its financial productivity is doubtful. The increasing expenses of health care, such as the generation of new technologies and treatment methods, pose new pressures in state healthcare systems.

Mental Health Crisis

Mental health is now considered among the biggest burdens in the current world health situation. Mental disorders such as depression, anxiety, and substance abuse are now part of the lifestyle across the world, and their incidence rate has risen over the last three decades. There is always personal suffering associated with mental health issues, but in addition, there are all costs related to the workforce output reduction and the costs of healthcare services.

It is now becoming more accepted, but mental health services are still lacking in many regions around the globe. When it comes to mental health, a lot of people, including those in developing nations, do not seek health care, are stigmatized, or it is not a cultural norm to do so, and in many low-income countries, it is not a priority. Medical facilities for mental health remain inadequate in developed countries, to say nothing of the developing ones, and psychiatric care is still expensive or unavailable, and the waiting list is equally long.

*Impact of Climate Change on Health*

Climate change is a relatively new phenomenon that negatively impacts human health. High temperatures, unfavorable climatic conditions, and detrimental changes to the environment contribute to a generally higher incidence of health issues. Extreme weather conditions have posed serious challenges, such as terrible natural incidents, including hurricanes, floods, wildfires, and other incidental outcomes frequently connected to public health.

Also, through environmental degradation, climate change aggravates current health precursors, including respiratory disorders arising from air pollution and other transmitted diseases by vector-borne insects, including malaria and dengue fever. Because there are shifts in climate, it becomes easier for disease-bearing organisms to infest areas that previously did not experience such diseases as malaria

Analysis/Discussion

Global Health Governance and Policy Coordination

First, global health governance is crucial in providing global health because it provides solutions to nationwide problems within public health and medicine domains. Global health refers to that aspect of health that several players influence, including international and national organizations and non-governmental organizations. In the case of WHP, international governmental organizations such as the WHO, the UN, and a host of other regional institutions play the role of key players in the world and also set policy directions for health in the global political arena. These organizations offer the mechanism through which global efforts against diseases, access to health, and working on the overall systems to be healthier, particularly in LMICs, can be coordinated.
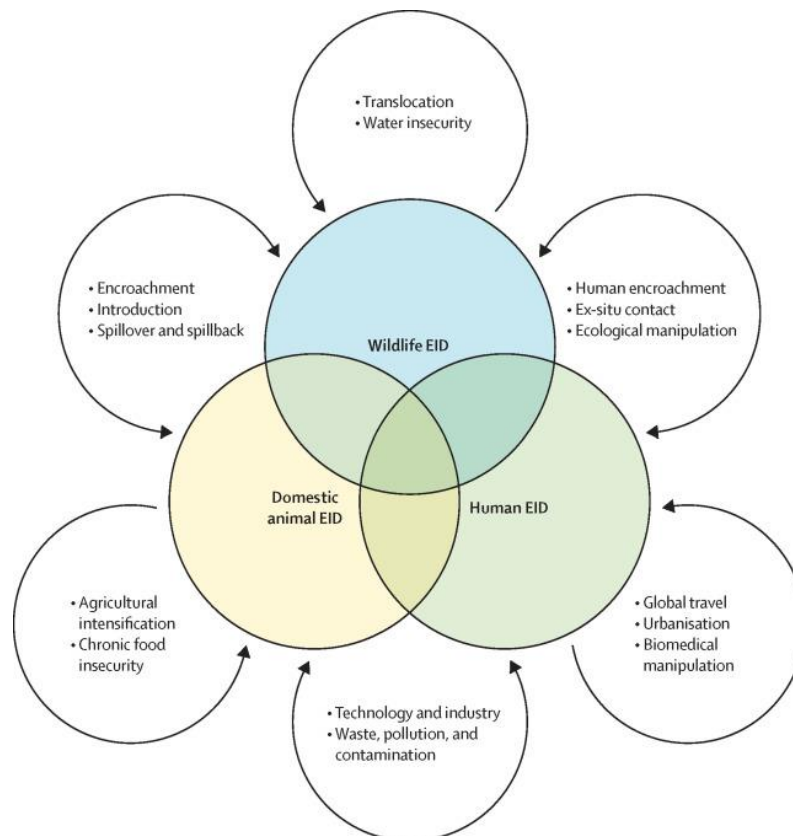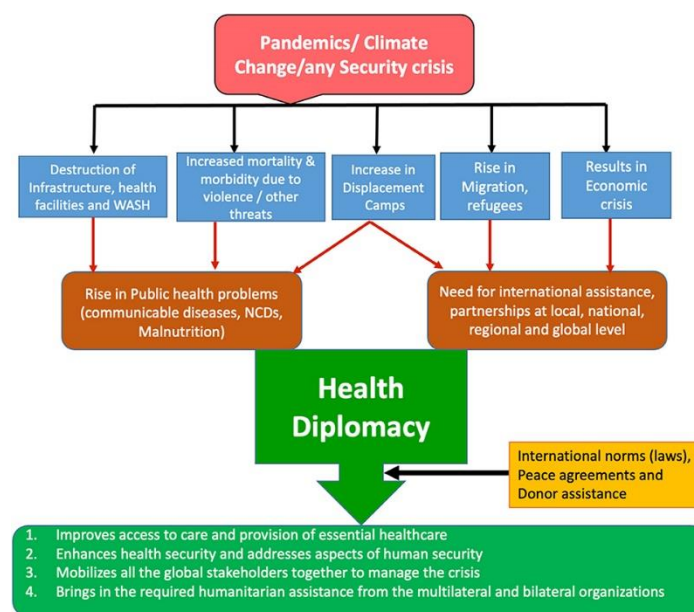

(Jamison & Breman, 2018)

As one of the chief global health organizations, WHO is involved in a leadership role that includes the overall direction of international public health, establishing health standards, and giving direction on the policies involved; that is why an international coordinating body can coordinate the respondent's actions in case of global health threats such as the Ebola outbreak in 2014 and the COVID-19 pandemic. The World Health Organisation collaborates with other international organizations, including the United Nations, the World Bank, and the Global Fund, to combat causes such as infectious diseases and maternal and child health. Some of these bodies help ensure that countries have the knowledge, resources, and directions to implement the right strategies.

Nevertheless, sometimes political and economic issues get in the way of worldwide collaboration. Nationalism can win over internationalism at these times, and states are often unmoved by sharing such assets or data for the common good out of fear of the ramifications on their economies or governments. For instance, in the early onset of COVID-19, some countries were accused of hoarding important

information, vaccines, and PPEs from other countries. The COVID-19 pandemic saw countries vying for vaccines, and this is one of the worst ways countries have gone on to destroy the effectiveness of global goals. This poses a problem to the collaborative approaches necessary to fight a disease; the disease does not respect geographical boundaries, and there has to be solidarity in case of an event.

There are numerous challenges to global health governance. Still, this paper will focus on four major issues, the first of which is the variation of health systems in high-income and developing nations. The predominantly high-income countries are in a position to maintain elaborate health systems that can ensure adequate measures for addressing the emerging public health challenges as compared to the low-income countries that are still in the process of developing health systems infrastructure, human resources for health, and finances that could support the implementation of health solutions. Such inequality in capacity further poses major challenges in formulating fair and efficient international health policies worldwide. The current inequities should, therefore, be corrected when formulating policies in international health governance so that the needs and environment of various countries are considered.

(Jamison & Breman, 2018)

Public health diplomacy is very important when dealing with health concerns like pandemics, AMR, and other epidemics. The emergence of the COVID-19 pandemic exposed many flaws in international relations cooperation, or, to put it another way, several states put their national self-interests above the global common interest. Some countries could acquire and stock vaccines, essential medical equipment, and therapeutics and let the other countries fight for the leftover consignment of vaccines. The pandemic revealed the need to carry out further consolidation of the commitments in global agreements to provide accurate distribution of vaccines and other essential resources across the globe during emergencies.

Subsequently, these key lessons suggest that GHG [Global Health Governance] must work towards establishing higher levels of international cooperation, improved preparedness, and improved communication. One of the important changes that stemmed from the COVID-19 pandemic will be the setting up of better cooperation among countries on how actual pandemics will be dealt with in real-time since resources and updates are shared in real-time. Additional funding for global health also means investments in strengthening health systems everywhere in order to prevent and adequately respond to new health risk trajectories.

Technological Innovations and Solutions

Analysis of the use of technology in healthcare shows that technological enhancement may contribute to better healthcare that seeks to solve some of the global problems affecting healthcare. Technologies in public health and medicine have the potential to alter the shape of health delivery, hence increasing the efficiency and quality of services in hard-to-reach areas. To some extent, this has been realized by advanced technology that has brought about digital health technology, improving healthcare management, particularly in developing nations.

eHealth tools such as telemedicine and mobile health applications are other forms of technology that have enhanced population access to healthcare in areas of low resources. Other benefits include telemedicine, which gives health professionals a way of examining and treating patients through electronic media without physically coming into contact with them, sparing the patients the trouble of having to walk long distances to seek treatment. This has been crucial in most low-income nations as it provides a means for people to obtain healthcare when traveling to these facilities or spending so many hours in transit, which is inconceivable. Mobile health applications, which comprise features such as education on health, wellness tracking, and even medication alarms, have also become rather popular and have thus helped in narrowing the gap in health needs.

Technology has made great progress in inventing means of diagnosing, treating, and preventing infections and diseases by developing vaccines. These include enhancing biotechnology knowledge and skills in the generation of COVID-19 vaccines, such as through the application of mRNA vaccine technology, which is faster and more manageable than past traditional methods in developing vaccines for emerging diseases. Besides vaccines, advanced diagnostic equipment with AI and machine learning is also displacing diseases and associated treatments to deliver more accurate solutions in record time.

However, such an opportunity is still a problem and access to these technologies remains uneven. During the past few decades, HICs have embraced telemedicine, digital health, and sophisticated treatments, though many LICs still face the worst kind of primary care systems. The digital divide, which concerns the differential distribution of these technological resources, has therefore persisted as a method of excluding the poor from technological advancement. This is why new technologies are to be made available to the people in low-income areas, especially in developing nations, so that a gap between the different groups of people in society is not created and new achievements attained in the health sector are enjoyed by all classes of individuals.

Technological progress provides great opportunities but also creates problems, such as privacy violations, information security, and availability. The violation of patient information confidentiality is critical when the use of technology and artificial intelligence in the provision of health care services continues to rise(Jamison & Breman, 2018). If these problems remain unsolved, trust and security concerns will likely limit the potential for effective use of technologies.

Health Financing and Universal Health Coverage

Achieving Universal Health Coverage (UHC) is arguably the most important target in the campaign to attain healthier populations around the globe. UHC guarantees that every person and every population group has timely and adequate access to required promoted health care and avoids incurring undue costs. The realization of UHC remains contested and difficult, especially for LMICs, which lack financial resources, infrastructure, and human power (Al-Nawafah et al., 2022; Mohammad et al., 2024). The lack of a coherent public health system means that sometimes, the barely decent access to healthcare is the lot of the poorest individuals, and the best is reserved for the top layers of society.

The biggest barrier to enabling UHC is, therefore, the challenge of being able to afford to provide healthcare services to millions of people at a time when the costs of healthcare continue to rise. An aging population, apex incidences of chronic diseases, and increased costs of medical care put pressure on healthcare facilities. The cost of delivering public services in many LMCs may be beyond the reach of either the country's budget

or the levying capacity of the population. Thus, many depend on international donor agencies and/or aid from foreign governments.
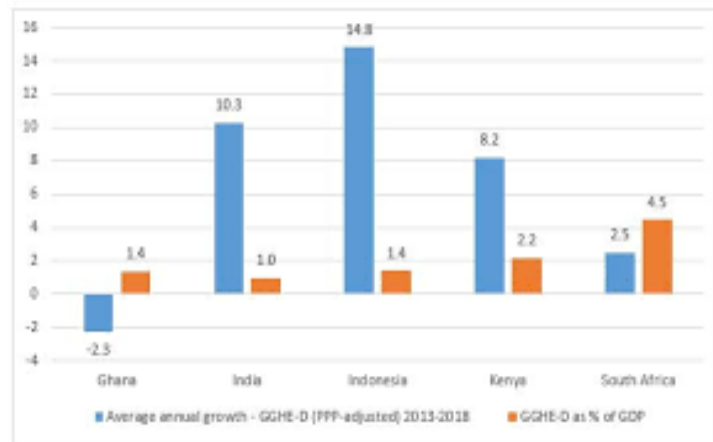
(Jamison & Breman, 2018)

Global health funding systems provide the solution to these challenges. Some agencies, such as the Global Fund, have assisted countries in fighting HIV/AIDS, tuberculosis, and malaria by granting support to low-income countries. Also, bilateral aid schemes, whereby developed countries give out funds directly to developing countries, aid the development of health facilities with the support of health-related projects. However, such programs have been effective, and nevertheless, these programs do not adequately address the expanding demands for healthcare in the developing world. There is a necessity for more investment in improving the health care systems—for governments and private sectors—to enhance the view to the constant perspective and to meet the health-related needs of everyone.

In addition, the challenge of funding UHC is also complicated by the need to ensure optimal healthcare resource use. It is well known that corruption, mismanagement, and inefficiency in healthcare expenditures remain pervasive challenges in many nations, particularly in the developing world. To support effective health financing, proper means of accountability should show how the resources are being used most efficiently and fairly in countries across the globe.

Realizing UHC also involves boosting health expenditures, which must be directed to sectors with the neediest populace (Braveman & Gottlieb, 2017; Ghaith et al., 2023; Alolayyan et al., 2018). In the case of many low-income countries, it implies moving from high-cost, curative-orientated approaches to prevention and public health. Mass immunization, mother and child health protection, and early disease detection are cost-effective means of decreasing disease load and later expenditures.
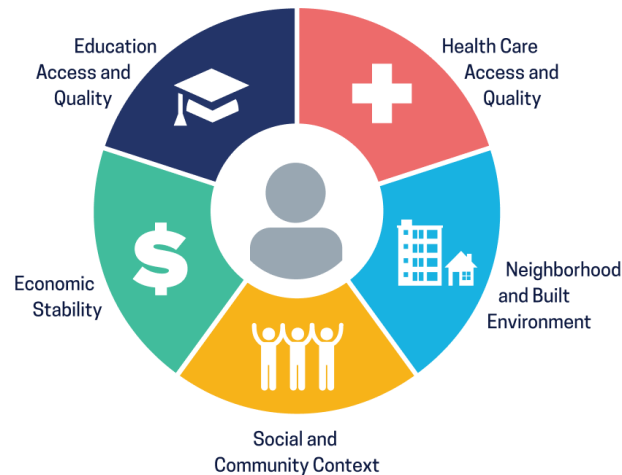
Health Equity and Social Determinants of Health

As for equality, it is essential for health intervention if health equity has to be made central to enhancing the quality of health globally. Health disparities remain entrenched in the social factors relating to income, education, employment, and housing. Such factors are sequentially interrelated, and society simultaneously finds itself in poverty and poor health. Addressing health disparities involves going beyond the health system and addressing the root causes. Experiences from classic health promotion interventions (Chisholm & Mendis, 2015; Al-Hawary et al., 2020; Rahamneh et al., 2023).

Governments must deal with health inequality through social policies dealing with education, poverty status, water and sanitation, and health facility access. Access to education is prevalent in enhancing health since learning provides information concerning balanced practices necessary for better and healthier lives. In this paper, it has been proposed that the social determinants of health contribute to the poor health of the

population, and the government has the role of tackling them to decrease health inequalities among the population.

(Ali & Shaukat, 2015)

Eliminating social determinants of health also requires cultures and structures to change if health disparities between ethnic minorities and the rest of the population, including indigenous peoples, refugees, and more, will not continue. Stigma, ethno violence, linguistic inequalities, institutional racism, and prejudice result from insensitivity and legislation that bar specific minorities from accessing healthcare facilities. Health systems should recognize these populations so that everyone can access quality care regardless of who the patient is.

Obtaining health equity also entails addressing the gender health issue. These factors are still evident in how women and girls, who are often the worst affected by inadequate access to health care because of cultural practices that still uphold and encourage gender-based violence and lack of decision-making power for accessing healthcare facilities in most households and communities, Women's rights, gender mainstreaming in health policies, and female and girls' health rights are keys to better health and equity.

The failure to address social determinants of health and eradicate cultural, economic, and structural inequalities in healthcare is making the world face difficult times. It will not be able to achieve the long-standing goal of providing primary healthcare for every person but for everyone equally based on his/her merit.

Therefore, it is clear that managing global threats to public health and medicine does not depend on one individual, approach, practice, or professional. Tremendous challenges exist for which global health governance, technology, sound health financing, and emphasis on health equity constitute significant approaches to resolution. Simply investing in health systems, guaranteeing access to care, and combating social determinants of health are outcomes that will make our world a healthier and fairer place for everyone.

Conclusions

The issues involved in public health and medicine are more or less global, not single-faceted, and require cooperation from governmental and non-governmental organizations, healthcare facilities, and men. Although continuity in improving infectious diseases and maternal health, among others, has impressed, the rising tide of non-communicable diseases, mental health, and unequal distribution of health remains a threat to global health.

Thus, it is imperative to call familiarization integrated approaches based on health equity, international cooperation, and sustainable development of health care systems. In this way, the world will start pulling the string on the global health threats that affect millions of people in one or another throughout the world by investing in healthcare capacity, increasing access to healthcare services, and ensuring that those leveraging technological advancement get felt by most of the needy in the society. In the same way, policymakers must remain focused on global public health as one of the main concerns when striving for a better future for the whole society.

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