

Global Health: Challenges And Responses

Shuaib Kayode Aremu¹ , Azeez Oyemomi Ibrahim² , Kayode Rasaq Adewoye³

1. Department of ENT, Afe-Babalola University Ado-Ekiti, Nigeria.

2. Department of Family Medicine, Federal Teaching Hospital Ido-Ekiti, Ekiti State, Nigeria.

3. Department of Community Medicine, Afe-Babalola University Ado-Ekiti, Nigeria.

Abstract

Background: Globalization has made the world perceive health from a global perspective, considering how trends and events in individual countries and different regions impact health at the international level. As the world strives towards health for all, there are some major challenges slowing progress.

Materials and Methods: A literature search for studies on Global health challenges was performed using Google Scholar search database, PubMed, Medline, and ScienceDirect. The bibliographies of included studies were also searched for additional references. About 115 articles were identified. Twenty-five articles were considered suitable for the review.

Results: Climate change is identified as presenting the biggest threat to the achievement of health globally. Unsafe products and poor nutrition are also a significant threat to people's wellbeing worldwide. Lifestyle changes and increased use of harmful chemicals in consumer products pose a serious health risk. Low health literacy also presents a challenge as it hinders proper communication of health-related information. Inadequate investment in health workers further adds to the challenge of access to health care..

Conclusion: Global health remains the top issue around the world, directly influencing decisions on all other aspects of life, whether they are social, economic, or environmental. Good health is a priority at the individual, national, and international levels. As the world tries to address illnesses and ensure the safety of the population, serious challenges limit the success of the initiatives set in place.

Keywords: Global health, interventions, health literacy, infection.

1. Introduction

Disease and medical misfortune have been a serious concern for people over the centuries, inspiring numerous international initiatives relating to health and tropical medicine. Human health and wellbeing have undergone a revolution in the last century. Major breakthroughs in healthcare have seen a general improvement in people's health. Many of the industrialized have witnessed improvements in life expectancy, which almost doubled between 1900 and 2000. Less developed countries also recorded considerable declines in the mortality rates and improvement in the standards of living. Dreaded infections such as cholera and smallpox came under control enhancing expectations of everyone attaining good health. As such threats rescind, others have emerged, including cancer and HIV/AIDS.^[1] Aspects of modern lifestyle seem to promote unhealthy behavior including high-fat diets and smoking. Resistance of some microbes to medicines commonly employed in their treatment is also worrying. A considerable gap exists in the disability and mortality rates within and among countries. The disparity has been gaining greater recognition with the World Health Organization mounting an international campaign to achieve "health for all."

The hyper-globalization witnessed in the last few decades has pushed people to start thinking of health as a genuinely global phenomenon. There is a growing acknowledgment of health as something that requires solidarity and collaboration, and one that goes beyond the traditional boundaries. Various crises have depicted the need to live in an interdependent world where events, circumstances, and decisions in distant places shape health and wellbeing. Today, the spread of pandemics between countries occurs within days, drivers of unhealthy lifestyles change their location, health practitioners emigrate from their countries of training where their need is greatest, environmental health risks defy national borders, and there is global level integration of food supply chains.^[2] The globalization of health has great potential risks and rewards. However, efficiency in the management of the risks and reaping of the rewards is dependent on how effective the world's governments, international institutions, civil society organizations, and businesses are in the management of globalization.

WHO has identified several urgent health challenges that pose a threat to global health. Some of them are inter-linked. They do not take a specific order. Eradicating them requires international policies and facilities that are effective.

1. Climate Change

Climate change presents one of the biggest threats to global health. Even though it is associated with some localized benefits, including higher food production in particular areas and fewer deaths in temperate climates during winter, the overall impact of climate change on health is overwhelmingly

negative. The World health organization expressed its fears over the potential adverse impact that climate change presents to health. According to WHO, the phenomenon affects the environmental and social determinants of health, among them, adequate food, safe drinking water, secure shelter, and clean air.^[3] WHO Projections point to about 250000 more deaths annually between 2030 and 2050 due to malaria, diarrhea, malnutrition, and heat stress.

1.1. Extreme Heat

Extremely high temperatures in the air are directly linked to deaths from respiratory and cardiovascular diseases, especially among the elderly. For instance, more than 70000 people died in Europe's 2003 summer heatwave.^[3] Such temperatures also increase the concentration of pollutants in the air, mainly ozone, worsening cardiovascular and respiratory disease. Extreme heat is also associated with a higher concentration of pollen and other aeroallergens, which can trigger asthma, a condition affecting about 300 people around the world. Further increases in temperature being witnessed at the moment are expected to exacerbate the situation.

1.2. Infection Patterns

Climatic conditions have a strong impact on some diseases such as those transmitted via water, snails, insects or other cold-blooded animals. Climatic changes can elongate the transmission seasons of critical vector-borne infections and vary their geographic range. For instance, changes in climate are expected to widen considerably the area in China affected by schistosomiasis. The climate of an area strongly influences malaria, which is transmitted by anopheles mosquitoes and is responsible for at least 400000 deaths annually.^[3] Climate conditions also influence the presence of the Aedes mosquito responsible for dengue infections. Research indicates a likely increase in exposure to dengue due to climate change.

1.3. Natural Disasters

The number of natural disasters linked to weather has more than tripled globally since the 1960s. Such disasters account for over 60000 deaths annually, particularly in developing countries. Extreme weather events, coupled with rising sea levels, will destroy medical facilities, homes, and other essential services. At least half of the world's population resides within a 60km range of the sea. Rising water levels may compel them to move, exposing them to greater health risks, among them mental disorders and communicable diseases.

1.4. Variable Rainfall Patterns

Increasingly variable patterns of rainfall can affect the availability of freshwater. Inadequate safe water can impact hygiene negatively and heighten the risk of diarrheal infection, which is responsible for more than 500000 deaths of children below the age of five years annually.^[3] Water scarcity, in some extreme cases, culminates in drought and famine. WHO projects that climate change may result in a higher frequency and greater intensity of drought by the late 21st century at both the regional and global scale.

At the moment, the frequency and intensity of floods and extreme precipitation is increasing. Floods contaminate supplies of fresh water, create breeding for disease vector insects such as mosquitoes, and increase waterborne disease risk. They also disrupt medical supplies and health services, lead to physical injuries and drowning. Variable precipitation and rising temperatures are likely to result in reduced production of staple foods particularly in the poorest regions. Such a development will exacerbate the prevalence of malnutrition, which is responsible for 3.1 million deaths annually.

1.5. Interventions to Address Climate Change

Considerable and increasing amounts of resources are being channeled towards climate change interventions. However, the basis of resource allocation should be on the available evidence on their efficacy, the costs, and the circumstances. One of the strategies that can help address the causes of climate change is piling international pressure on countries to adopt green growth strategies.^[4] For instance, international trade agreements should have provisions that compel all trading partners to meet set minimum standards with respect to the measures employed in combating climate change. Incentives can also encourage organizations and individuals to adopt environmentally friendly practices that promote a green economy. Such measures will bring about behavioral change, which is necessary for reducing the carbon footprint and protecting critical aspects of human life, such as health.

2. Poor Nutrition and Unsafe Products

Nutrition constitutes an essential component of health and development. Proper nutrition contributes to improved maternal, infant, and child health, safer pregnancy and childbirth, stronger immune systems, reduced non-communicable disease risk, and longevity. Malnutrition presents considerable threats to human health.^[5] Food scarcity, unhealthy diets, and unsafe foods are linked about a third of the world's disease burden. While hunger and food insecurity remain a critical issue, more people are having unhealthy diets full of sugar or fat leading to increased cases of diet- and weight-related diseases. Most countries have also witnessed an increase in the use of e-cigarettes and tobacco, a trend that is serving to raise further health concerns.

Harmful chemicals in many consumer products also pose major health risks to individuals globally. The number of chemicals present in food is increasing. With the growth comes the challenge of establishing their implications on human health as the relevant research lags. Chemicals found in some consumer products have caused public health crises.^[6] A good example is in the pulmonary fibrosis outbreak that occurred in South Korea, affecting at least 1000 people found to have been caused by a group of humidifier disinfectants.^[7] The challenge chemicals pose is unique compared to pollutants emitted by industries.

First, chemicals present in consumer products can have a wide reach impacting vast populations within a short time. For instance, polyhexamethylene guanidine (PHMG), which is one of the disinfectant linked to the South Korean pulmonary fibrosis outbreak, reached out to about eight million people.^[6] The 1986 Chernobyl accident, in comparison, the worst nuclear accident in history, resulted in the relocation of merely 336000 people. Second, consumers are likely to be in contact with the chemicals present in consumer products on a daily basis. The chemicals are transferable to the human body. Given the diversity of such chemicals, the issue of co-exposure to numerous chemicals in different consumer products can result in combined effects even in cases where the levels of the chemicals are considered safe. Third, it is difficult to take the chemicals out of use once they have been commercialized even when knowledge of their harmful effects becomes available. For instance, building paint containing lead constitutes a major source of exposure to lead globally despite the fact that many countries banned it in the 1970s.^[8] Products with such prohibited chemicals may also circulate in second-hand markets or pass down through generations resulting in a source of continuous human exposure. Fourth, the level of risk the chemical poses may vary depending on the way it is used in the product and the nature of interactions that humans have with the product. For instance, phthalates are present in shampoos, food containers, and cellphones with the respective health risk significantly varying among the products.^[9] Product recycling can also result in the presence of chemicals that may possess utterly different patterns of exposure and properties in retaining chemicals.^[10]

The World Health Organization is keen on combating the issue. One of the approaches it has employed involves working with countries to enable the development of evidence-based public policies, private sector reforms, and investments to reshape food systems and avail not only healthy but also sustainable diets. The initiative is also meant to build capacity and political commitment to strengthen the implementation of tobacco control policies that are evidence-based. Such efforts on the part of WHO can achieve optimal outcomes if other major stakeholders ensure they play their role fully.

Governments and suppliers have to collaborate to identify innovative and sustainable agricultural solutions that can aid in tackling food insecurity.^[5] Focus has to be on priority areas. Greater investment is necessary in enhancing productivity and changing food culture in some regions. For instance, there is excessive consumption of meat in western economies, which is negatively impacting the environment, a sharp contrast to the case of Africa, where people generally consume too little meat.

3. Health Literacy

The ability of individuals to obtain basic health care information, process it, and understand it to make proper health decisions is critical in enabling them maintain proper health. The education level is a critical determinant of health literacy. Many people around the world find it hard to read and comprehend the instructions and information on medicine bottles, prescriptions, informed consent documents, appointment slips, health education materials, and insurance forms.^[1] Their limited reading skills imply limited health-literacy skills. Such a situation leads to ineffective communication between patients and health providers, resulting in poorer health, medication errors, and higher healthcare-related costs. Taking into consideration self-reported health status, patients with inadequate literacy skills tend to use up more hospital resources compared to other patients.

In many developing countries, low levels of literacy are an impediment to raising health literacy. However, there has been continued rapid growth in literacy levels among the population both in the developed and developing nations around the globe, which translates to higher health literacy levels. Stakeholders can employ various approaches to ensure that consent forms, medical prescriptions, and other health-related print materials are more comprehensible to people with limited literacy and health literacy skills.^[1] For instance, media campaigns and health professionals can direct their messages towards people with lower levels of education. New information technology will help in improving health literacy. There is increasing expansion in advanced networking technologies, electronic communication, and educational multimedia products serving to show promise of growing health literacy.

One of the approaches to the promotion of health literacy that has the potential to improve health literacy worldwide and can help achieve better outcomes going forward is entertainment education. It has proved to be a promising strategy for health improvement in many countries. The approach depends on specifically crafted messages intended to entertain while at the same time educating the target population on an educational issue.^[1] Its aim is the creation of favorable attitudes and inspiring positive changes in behavior. Popular music, television soap operas, radio, comic books, and street

theatre have all been employed in educating the public on health issues such as HIV/AIDS prevention, improved sanitation, environmental health, female genital mutilation, and female equality.

Entertainment-education usually provides role models, both positive and negative, for health-related behaviors. For instance, there is a popular Tanzanian soap opera titled “Twende na Wakati” loosely translated as “Let’s go with the times,” featuring a truck driver who engages in unprotected sex with different women, including commercial sex workers.^[1] The driver’s conduct heightens his risk of HIV/AIDS infection and the spread of the virus. It also leads to unwanted pregnancies. Other negative behaviors he exhibits include alcoholism and a strong son preference. His behavior costs him his job, family, and life. His behavior is a sharp contrast to that of a tailor in the same soap opera who embraces a contraceptive and sires a single child. The tailor and his wife are financially secure. The program’s success is evident in the influence it has had on its listeners, with a quarter of them embracing HIV prevention and adopting family planning mainly by triggering conversations on the issues.

4. Underinvestment in Health Workers

The Covid-19 pandemic has strongly highlighted the inadequacies of the capacities of nations to deal with emerging health, social, and economic needs of countries in the event of a health crisis. Most countries have, for years, been grappling with shortage of enough healthcare workers to meet their healthcare needs. The health workforce is a primary component of any health system functioning properly. All nations face the issue of ensuring proper distribution and supply of health professionals, managing their performance and motivation, retaining them, and maintaining appropriate training levels.^[11] Despite this, there are particular challenges that policy makers in low- and middle-income countries have to deal with in an environment characterized by limited evidence necessary in guiding and lending authority to their decisions. Global health initiatives and donor agencies neglected human resources for health and instead favoring easier, specific areas, including vaccine provision and supply of medical products. Growing awareness on challenges such as HIV/AIDS, migration, and obstacles to the expansion of interventions has emphasized the need for increased investment in the health workforce and placed it at the top of the global health agenda.

A UN (United Nations) commission has projected a shortfall of 18 million health care workers by 2030 and rooted for urgent investment to enable the creation of new jobs in the health sector to avert the impending crisis.^[12] The greatest need for these workers will be in low-income countries to meet the needs of the population, spur economic growth, and achieve universal health coverage. According to the United Nations report, there is increasing demand for health workers as non-communicable diseases

increase and populations age. Projections point to the creation of about 40 million new jobs in the health care sector, representing 100% growth in the size of the global health workforce at the moment. However, most of the newly-created jobs will be in the developed world, leaving a deficit of 18 million health workers, particularly in the low- and lower-middle-income nations. Investment in the training of health professionals is necessary in enabling progress towards the achievement of sustainable development goals such as health, inclusive economic growth, and global security. The UN Commission on Health Employment and Economic Growth notes the abundance of evidence showing the potential of investment in health to stimulate growth and the empowerment of women and youth economically. According to a report by the commission, about a quarter of the economic growth recorded between 2000 and 2011 in the low income countries as well as the lower-middle-income nations is attributable to the value brought about by improvements in health. The former WHO director-general, Margaret Chan has in the past noted that countries have, for a long time, viewed health workers as merely another type of expense that they have to manage as opposed to perceiving it as an investment with tremendous returns for health, global health security, and economic growth.

Governments and other relevant entities around the world can take deliberate steps that can help turn around the situation. One of the necessary actions is stimulation of investment in the creation of decent health sector jobs especially for youth and women, with the appropriate skills, in the appropriate amounts, and the right places.^[12] There is also a need for more health workers in primary and community-based care and prevention, with special attention on underserved regions. Other recommended measures include addressing gender inequities and biases in the health labor sector and education to promote the empowerment of women. Sourcing for adequate funding, both private and public, locally and internationally, is necessary to enhance not just the quality of education but also lifelong learning. More efforts are also needed to make sense of workforce migration for optimization of benefits and to avoid disadvantaging some countries. Investment in health professionals is a component of the broader goal of ensuring more robust health systems, as well as social protection, setting up the basis for management of an international health crisis. West Africa's Ebola outbreak depicted just how inaction and chronic underinvestment in health workers can compromise human health and result in severe social and economic setbacks.

5. Threat of Anti-Microbial Resistance (AMR)

In the last two decades, antibiotic resistance has proved to be a major threat to global health impacting public health systems the world over. AMR refers to microorganisms' ability to counteract drugs usually

employed in treating associated infections by developing mechanisms rendering them resistant and allowing the transfer of genetic traits that are resistant to the community. The ability to resist can be innate and have an intrinsic relation to a microorganism's anatomy or physiology, conferring resistance via the different mechanisms. In some species of bacteria, intrinsic resistance constitutes an inherent trait unaffected by the employment of antibiotics. Genetic changes and the uptake of genetic material through horizontal transfer from other strains of bacteria are the typical ways by which resistance is acquired.^[13] Even though genetic mutations tend to be relatively rare, there is still a high probability of a high increase in the number of bacteria that are resistant due to the high rate of replication. The spread of drug resistance genes can take place from one gene to another by horizontal transfer mechanisms via plasmid exchange, while the transfer of virus is by transduction. New resistance mechanisms in recent times have led to the development of resistance to different classes of antibiotics resulting in extremely dangerous multidrug-resistant (MDR) strains of bacteria. A good example is MDR Salmonella Typhimurium phage type D104, whose dissemination is worldwide, just as is the case with other major clones, bears the SGI1 (genomic island 1) resistance encoding to various antibiotics. Due to its resistance and virulence gene properties, isolates containing a variant of SGI1 carry the risk of rapid dissemination.

As a major threat to the global public health care system, AMR can hamper the management of different infectious diseases significantly limit modern medicine. The increasing AMR phenomenon is linked to "selective pressure" resulting from the inappropriate use, misuse, or overuse of antimicrobials in both humans and animals. Infections by strains that are resistant to antibiotics result in metastatic infections, lower quality of life, chronicity, increased recurrence rates, and opportunistic infections with organisms that are resistant in the future. The increase in the isolation of human pathogens that are resistant (such as vancomycin-resistant enterococci, campylobacter, and salmonella) and associated with a higher risk of complications, more frequent failure of therapy, and worsening of pathological conditions resulting in death in some cases, is evidence of the extent of the problem. According to 2009 data estimates from Europe's Center for Disease Control, Norway and Iceland recorded 25000 deaths due to AMR with about 2.5 million more days at the hospital.^[14] China and the US recorded 80000 and 100000 deaths during the same period as a result of AMR. The impact of the spread of AMR bacteria is alarming, with its potential destructive ability comparable to that of global warming. AMR was a key topic at the 2013 G8 summit, with the science ministers of the countries in attendance identifying it as a significant 21st-century security challenge in need of an intensive international collaboration.

Tackling the issue of AMR requires political will among countries. They should be willing to contribute to both local and international efforts to combat antibiotic-resistant bacteria. Radical measures are necessary to contain the problem before it escalates to levels that may prove extremely difficult to manage. A simple acknowledgment of the severity of the issue is not enough. Actions of some of the major economies point to their recognition of the weight of the issue and their willingness to put in their best to address it. In 2013, the U.S president launched a five-year plan to combat AMR, dedicating \$1.2 billion towards research and development that would lead to new antibiotics.^[14] He went a step further to sign an executive order in which he instructed federal agencies to adopt the national strategy to address antibiotic-resistant bacteria.

6. Conclusion

Global health remains the top issue around the world, directly influencing decisions on all other aspects of life, whether they are social, economic, or environmental. Good health is a priority at the individual, national, and international levels. As the world tries to address illnesses and ensure the safety of the population, serious challenges limit the success of the initiatives set in place. The most significant issues presenting considerable obstacles to the achievement of health for all include climate change, poor nutrition, unsafe products, inadequate levels of health literacy, underinvestment in health workers, and the threat posed by anti-microbial resistance. While there has been considerable investment in addressing the challenges, more needs to be done to ensure addressing such issues remain a priority given the role that good health for all plays in the growth and development of any economy.

References

1. Ratzan SC, Filerman GL, LeSar JW. Attaining global health: Challenges and opportunities. Washington, DC: Population Reference Bureau; 2000 Mar.
2. Hoffman SJ, Røttingen JA. Global challenges: Global health. *Global Challenges*. 2017 Jan;1(1):22.
3. WHO. Climate change and health. 2018 Feb. Retrieved from <https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health#:~:text=Climate%20change%20affects%20the%20social,malaria%2C%20diarrhoea%20and%20heat%20stress>.
4. Prowse M, Snilstveit B. Impact evaluation and interventions to address climate change: a scoping study. *Journal of Development Effectiveness*. 2010 Jun 22;2(2):228-62.
5. WHO. Malnutrition is a world health crisis. 2019 Sept. Retrieved from <https://www.who.int/news/item/26-09-2019-malnutrition-is-a-world-health-crisis>

6. Li D, Suh S. Health risks of chemicals in consumer products: A review. *Environment international*. 2019 Feb 1;123:580-7.
7. Park JH, Kim HJ, Kwon GY, Gwack J, Park YJ, Youn SK, Kwon JW, Yang BG, Lee MS, Jung M, Lee H. Humidifier disinfectants are a cause of lung injury among adults in South Korea: a community-based case-control study. *PLoS One*. 2016 Mar 18;11(3):e0151849.
8. Mathee A. Towards the prevention of lead exposure in South Africa: contemporary and emerging challenges. *Neurotoxicology*. 2014 Dec 1;45:220-3.
9. Hartle JC, Fox MA, Lawrence RS. Probabilistic modeling of school meals for potential bisphenol A (BPA) exposure. *Journal of Exposure Science & Environmental Epidemiology*. 2016 May;26(3):315-23.
10. Geueke B, Groh K, Muncke J. Food packaging in the circular economy: Overview of chemical safety aspects for commonly used materials. *Journal of Cleaner Production*. 2018 Aug 20;193:491-505.
11. Jimba M, Reidy MK. Opportunities for overcoming the health workforce crisis. *Human Resources for Health: overcoming the crisis*. 2009. Retrieved from <https://www.jcie.org/researchpdfs/takemi/ch2.pdf>
12. Limb M. World will lack 18 million health workers by 2030 without adequate investment, warns UN. [10.1136/bmj.i5169](https://doi.org/10.1136/bmj.i5169)
13. Roca I, Akova M, Baquero F, Carlet J, Cavaleri M, Coenen S, Cohen J, Findlay D, Gyssens I, Heure OE, Kahlmeter G. The global threat of antimicrobial resistance: science for intervention. *New microbes and new infections*. 2015 Jul 1;6:22-9.
14. Ferri, M., Ranucci, E., Romagnoli, P., & Giaccone, V. (2017). Antimicrobial resistance: a global emerging threat to public health systems. *Critical reviews in food science and nutrition*, 57(13), 2857-2876.

Source(s) of support: It is only the author who provided the financial support

Conflicting Interest :None

Contribution Details: Shuaib Kayode Aremu is the sole contributor to the manuscript preparation