KONTAGORA JOURNAL OF INTELLECTUAL DISCOURSE
(KJID)
January 2025
Vol.3 No.1, 2025.
ONLINE ISSN: 2756-5599

SUSTAINABLE APPROACH TO AVERTING ECONOMIC CRISIS THROUGH PREVENTIVE HEALTH SCIENCE

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DOI: https://doi.org/10.5281/zenodo.14644536

Abstract

The global economic crises have revealed the vulnerabilities of healthcare systems, particularly in low and middle-income countries. This escalating economic challenge calls for an innovative approach and a shift in policy from curative to prevention. Preventive Health Science (PHS) has emerged as a sustainable and cost-effective approach to mitigating the impacts of economic and social crises. It offers a sustainable pathway to reducing the financial burden on healthcare systems by ensuring health equity while enhancing positive population health outcomes. Deliberate actions are necessary to discontinue overwhelming the inadequate healthcare delivery system through sustainable approaches and initiatives that examine the factors underlining the total well-being of individuals in a population. This review explores the potential of preventive health science as a viable strategy to combat economic crises by reducing healthcare costs, minimizing workforce productivity losses, and promoting community resilience.

Keywords: *Economic Crises; Health care system; Population Health; Preventive Health Science; Sustainable Approach*

Introduction

Preventive health science describes an approach that promotes measures to prevent diseases, injuries, and other health conditions before they occur. It aims to enhance individual and community health through proactive strategies that reduce risk factors, address social and environmental determinants of health and promote healthy behaviours. The world has witnessed numerous economic crises in recent decades, devastatingly impacting global health, well-being, and prosperity (Marmot *et al*., 2020; Stuckler *et al*., 2009). This recent series of global economic crises has underscored the fragility of healthcare systems worldwide, particularly in low- and middle-income countries (LMICs), where healthcare resources are often limited and external shocks can quickly overwhelm public health

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infrastructure (Kruk *et al*., 2018). As healthcare systems grapple with rising costs, disease burdens, and economic instability, preventive health science has emerged as a critical approach to not only alleviate these pressures but also to promote long-term economic resilience (Abubakar *et al*., 2022). It is a vital strategy to mitigate the adverse effects of economic downturns according to Sturmberg and Bircher, (2019) as it encompasses a range of interventions aimed at promoting health, preventing disease, and protecting populations from harm (Caron *et al*., 2023). It focuses on strategies that prevent diseases before they occur. It offers a sustainable solution by addressing the root causes of poor health, reducing healthcare expenditures, and fostering healthier, more productive populations (Kisling and Das, 2023).

Preventive health measures such as vaccination, early disease detection, and lifestyle modification programs have been shown to significantly reduce the incidence of infectious and chronic diseases, which are major drivers of healthcare costs and economic burdens (Rémy *et al*., 2015). For example, vaccination programs are widely recognized as some of the most cost-effective health interventions, saving millions of lives annually and contributing to substantial healthcare savings (Ozawa *et al*., 2012). The World Health Organization estimates that immunization programs save $44 for every dollar invested, mainly through reduced treatment costs and productivity gains from healthier populations (Ozawa, 2016). Additionally, early disease detection programs, such as cancer screenings, can reduce treatment costs by allowing for early intervention, which is less resource-intensive and more effective than late-stage disease management (Schmidt, 2016).

Preventive health science also promotes economic resilience by fostering a healthier workforce, which in-turn drives productivity and economic growth (Kruk et al., 2018). Chronic diseases, such as heart disease and diabetes, are leading causes of disability and reduced productivity, especially in low and medium-income countries, where access to healthcare is limited (Ong, 2021). The United States Administration of substance abuse and mental health services affirmed that programs aimed at lifestyle modifications such as promoting physical activity, healthy diets, and reducing tobacco and alcohol consumption have been shown to mitigate the impacts of chronic diseases, allowing individuals to remain in the workforce longer and contribute to the economy. According to the World Bank, reducing the prevalence of chronic diseases can lead to an increase in gross domestic product

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(GDP) by up to 1% per year, particularly in developing countries where the economic burden of disease is substantial (Stuckler, 2008).

Furthermore, according to Basiu *et al.*, (2017) preventive health policies contribute to greater health equity, especially in marginalized communities, which often face the greatest economic barriers to accessing healthcare. Public health education and community-driven health models enable individuals to make informed decisions about their health and improve their access to preventive services. This approach not only reduces health disparities but also minimizes the long-term economic impacts of poor health by preventing high-cost, late-stage treatments (Glanz *et al.*, 2002). Investment in preventive health can serve as a stabilizing factor, enhancing national resilience to future economic disruptions by building healthier, more robust populations. By investing in preventive measures, governments and healthcare systems can reduce healthcare costs, enhance productivity, and foster economic growth. This review explores the potential of preventive health science as a viable strategy to combat economic crises by adopting a multifaceted approach able to integrate sustainable health practices in policy and governance to reduce healthcare costs, minimize workforce productivity losses, and promote community resilience.

Economic burden of health crises

Health crises refer to situations where the health of a population is severely compromised, often resulting in significant morbidity, mortality, and economic burden. These crises may be occasioned by infectious disease outbreak such as Covid-19, natural disasters resulting from climate change, and environmental disaster such as chemical spills (Madhav et al., 2017). It is characterised by sudden onset or gradual escalation, widespread impact on population health and overwhelming demand for health care services. Health crises place significant financial strain on economies by increasing healthcare costs, disrupting productivity, and shifting government resources away from growth initiatives. It creates profound economic burdens by straining public resources, disrupting productivity, reducing consumer spending, and increasing government debt (Economou *et al.*, 2015; Predkiewicz *et al.*, 2022).

Health crises resulting from pandemics and wars significantly impact economic growth in both direct and indirect ways. These crises cause disruptions in labour markets, healthcare systems, global supply chains, and public resources (Anghelache *et al.*, 2022; Madhav *et al.*,

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2017). The economic impact is both immediate and long-lasting, affecting multiple sectors and stakeholders. Majorly there are increased healthcare expenditure for example, the COVID-19 pandemic necessitated massive investments in testing, personal protective equipment (PPE), vaccine development, and distribution, all of which required significant public funding (Kaye *et al*., 2021). It could also result into long-term healthcare burden as in chronic diseases such as HIV, keeping public health expenditures high.

Health crises have a direct impact on workforce productivity as they increase absenteeism and labour market shrinkage causing gaps in critical industries leading to reduced productivity (Amy *et al*., 2021). Governments often need to reallocate budget resources toward health crises, drawing funds away from development, education, infrastructure, and other growth-promoting sectors (Abubakar *et al*., 2022). During the COVID-19 pandemic, for example, many countries took on additional debt to fund relief packages and healthcare initiatives. Health crises often cause disruptions in supply chains leading to shortages, which often increase prices for essential goods like food, medical supplies, and fuel (Shore *at al*., 2022; Serpil and Mehmet, 2020). Inflation makes it harder for consumers to afford basic needs and for businesses to manage costs, especially small businesses. Health crises also cause lasting health impacts in younger populations, affecting their long-term productivity potential. Children who experience severe health crises may face developmental challenges that impact their cognitive or physical abilities, ultimately affecting economic growth (Monnat and Chandler, 2015; Peterson *et al*., 2014)

Preventive Health Science: A sustainable Solution

Preventive health science represents a sustainable and forward-thinking approach to addressing health challenges, improving population well-being, and reducing the economic burden of disease (Caron et al., 2023; Abubakar *et al*., 2022). Unlike reactive or treatment-focused health strategies, preventive health science aims to forestall illness and manage risk factors before they result in disease (Kisling and Das, 2023). By promoting long-term health outcomes, preventive health approaches can substantially reduce healthcare costs, increase productivity, and contribute to economic stability (Musich *et al*., 2016; Thomas and Chakidou, 2016). Preventive health science is a cornerstone of sustainable health systems, offering a comprehensive approach that reduces the incidence of disease, lowers healthcare

costs, and strengthens population resilience (WHO, 2022; Kruk *et al*., 2018). As societies face rising healthcare costs, aging populations, and environmental health challenges, preventive health science stands out as a sustainable solution. Its emphasis on early intervention, education, and community health not only improves population well-being but also builds economic resilience by enabling healthier, more productive populations. Investing in preventive health science is an investment in a healthier, more prosperous, and sustainable future (WHO, 2022).

Economic Benefits of Preventive Health Science

Reduced Healthcare Expenditures: Prevention is typically far less costly than treatment. Programs targeting vaccination, nutrition, mental health, and lifestyle changes prevent many chronic and infectious diseases that would otherwise require long-term medical care (Kisling and Das, 2023). For instance, vaccinations can prevent diseases like measles and hepatitis, which would cost more to treat than to prevent. Recently in Nigeria, female children aged 9 to 15 were vaccinated against *Human Papillomavirus*. This is to prevent them against certain viruses that cause vagina cancer. Preventive care reduces the demand for expensive emergency treatments and chronic disease management, easing pressure on healthcare budgets (Brenzel *et al*., 2006).

Increased Productivity and Workforce Stability: Preventive health science boosts workforce productivity by keeping people healthy and reducing absenteeism. Healthier employees are more productive, take fewer sick days, and experience fewer interruptions in work due to chronic health issues (International labour organization, 2022) Workplace wellness programs encouraging regular health screenings, mental health support, and physical fitness are known to reduce healthcare costs and increase productivity (International Labour Organization, 2018). For example in Nigeria some workplace organize end of the year party where people come with members of their families for a social gathering that foster positive interactions among employees and especially between them and their employer. This promote healthy relationship which in turns ensures healthy living.

Long-Term Savings and Economic Growth: Preventive health initiatives, while requiring upfront investment, pay off significantly over time. The return on investment from preventive health interventions often exceeds the initial costs as they mitigate larger, long-term expenses

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related to treatment and disability. For example, diabetes prevention programs focusing on diet and exercise save billions in avoided healthcare costs and lost productivity (Taylor *et al*., 2023; Yong *et al*., 2010). In Nigeria for instance, civil servants pay a certain percentage of their wages for Health Insurance Scheme which covers for certain illness such as malaria and the likes for every registered members of their families.

Social Benefits of Preventive Health Science

Reduced Health Disparities: Preventive health science aims to reach populations at greater risk of poor health outcomes, including marginalized and low-income communities (Basiu *et al*., 2017) By addressing social determinants of health, such as access to nutritious food, clean water, education, and healthcare, preventive health can reduce health disparities and contribute to a more equitable society. Programs targeting maternal and child health, for instance, improve outcomes for children in disadvantaged populations, fostering a healthier next generation (Chelak and Chakole, 2023).

Empowerment through Health Education: Preventive health science emphasizes educating the public on healthy lifestyle choices and risk factors for disease. This is usually done in clinics and schools where health professionals and educators keep people informed on lifestyles that promote healthy living. Health education initiatives promote self-care, encourage early medical consultation, and inform people about managing chronic diseases. With greater health literacy, individuals can make informed decisions, adopt healthier lifestyles, and actively participate in their well-being, reducing the prevalence of preventable conditions (Kumar and Preetha, 2012; Stoto *et al*., 2020).

Improved Quality of Life: Preventive health science fosters a society where individuals experience higher levels of well-being and life satisfaction. Healthier people live longer, suffer less, and maintain a higher quality of life (Eric *et al*., 2014). Physical and mental health interventions enable people to lead fulfilling lives without the chronic pain, stress, and limitations that often accompany preventable conditions like obesity, heart disease, and depression (Mahindru *et al*., 2023)

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Environmental Impact of Preventive Health Science

Mitigating Pollution-Related Health Risks: Environmental factors like air pollution, contaminated water, and toxic exposure are major contributors to diseases, including respiratory illnesses and cancers (Shilpa *et al*., 2023). Preventive health science includes environmental health policies aimed at reducing pollution sources, improving air and water quality, and regulating hazardous substances. Cleaner environments reduce the incidence of disease, decreasing the demand for healthcare resources.

Climate Change and Health Risks: Climate change increases health risks by intensifying heatwaves, floods, and disease vectors. Preventive health strategies that address climate-related health risks such as improving sanitation in vulnerable areas, promoting vaccination against climate-sensitive diseases, and establishing early warning systems help societies adapt to changing environmental conditions and reduce health impacts (Hosseini *et al*., 2024).

Sustainable Health Infrastructure: Preventive health science supports sustainable health infrastructure by emphasizing community-based, low-resource interventions. These include sanitation improvements, access to clean drinking water, and community health education, all of which contribute to environmental sustainability by minimizing the need for intensive medical treatments that can increase environmental waste and resource consumption (Hotton and Chase, 2017).

Policy and Community-Based Approaches

Public Health Policies and Regulations: Effective preventive health requires policies that create a supportive environment. Government policies promoting tobacco taxes, restricting sugary beverages, enforcing air quality standards, and regulating food labeling all reduce health risks. Policies around active transportation, like safe walking and biking paths, encourage physical activity and reduce the risk of lifestyle diseases (Van der *et al*., 2020)

Community Health Programs: Localized health initiatives tailored to specific community needs have been successful in many regions. For example, community health workers in rural areas provide basic healthcare services, health education, and screening, reaching populations that may not otherwise have access to preventive care. Community-driven programs also

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foster a sense of ownership and empowerment in managing public health (Van *et al*., 2023; Ahmed *et al*., 2022).

Public-Private Partnerships: Collaborations between governments, businesses, and non-profits can scale preventive health efforts. Private companies can implement wellness programs for employees, support local health campaigns, or contribute to vaccination drives. The involvement of multiple sectors brings resources, expertise, and funding, amplifying the impact of preventive health efforts (Soni *et al*., 2023; Alderwick *et al*., 2021;Wipfli *et al*., 2018).

Technological Innovations in Preventive Health

Telemedicine and Digital Health: Digital health tools make preventive care more accessible and affordable. Telemedicine platforms offer remote screenings, consultations, and monitoring, especially useful for chronic disease management and preventive checkups in underserved areas. Wearable devices and mobile apps provide real-time health data, encouraging individuals to monitor their own health proactively (Haleem *et al*., 2021; Maha, 2024).

Big Data and Predictive Analytics: Data analytics in preventive health allows healthcare providers to identify high-risk populations, track disease trends, and design targeted interventions. Predictive modeling identifies patterns that contribute to illness, informing public health campaigns, and improving resource allocation (Batko and Ślęzak, 2022; Nsubuga, 2006).**Genetic Screening and Personalized Prevention**: Advances in genomics allow for personalized preventive measures. Individuals with a genetic predisposition to certain diseases, such as heart disease or cancer, can receive customized preventive care plans, potentially preventing or delaying disease onset (Jain *et al*., 2022; Strianese *et al*., 2020)

Conflict Resolution as a preventive health science strategy

Conflict resolution as a preventive health science technique seeks to address the root causes of conflict between nations, fostering peace and cooperation rather than letting tensions escalate to violence or war (Bernard, 2012). Recognizing that conflict between nations has significant health and economic repercussions, conflict resolution initiatives work to

preemptively diffuse tensions, reduce violence, and create healthier societies by focusing on dialogue, diplomacy, and collaborations (Larson, 2021). Mediation brings neutral parties to facilitate discussions between conflicting nations. By creating a structured dialogue, mediation helps nations air grievances, build mutual understanding, and work toward compromise (Zhomartkyzy, 2023). Countries with shared resources, for example, can use mediation to avoid resource-based conflicts, such as those over water or energy, thus reducing health and economic costs associated with such conflicts. By using preventive health science to resolve conflicts, nations can focus on building stronger health systems and work cooperatively on global health challenges. Public health diplomacy fosters cooperation in areas like disease surveillance, information sharing, and research, strengthening nations' ability to respond to future health crises (Karačić *et al*., 2023; Zhang *et al*., 2023). Peace is increasingly recognized as a fundamental social determinant of health, and organizations like the World Health Organization advocate for peace building as part of their global health strategies. Nations are encouraged to view peace as essential for health, investing in conflict resolution as a sustainable health solution (Mandhari *et al*., 2021).

Conclusion

Preventive health science is a critical component of economic sustainability. By prioritizing preventive health measures, governments, healthcare systems, and stakeholders can mitigate the economic impact of health crises, promote sustainable economic growth, and ensure a healthier, more resilient future for all. Investing in preventive health measures yields substantial economic benefits, enhances productivity, and promotes sustainable economic growth. Adopting a sustainable approach to averting economic crises through preventive health science offers a powerful, proactive strategy to protect both national economies and public well-being. By investing in preventive measures such as widespread vaccination, health education, early screenings, and addressing social determinants of health, societies can reduce the incidence and impact of diseases that otherwise strain healthcare systems, reduce workforce productivity, and drive up healthcare costs. Preventive health science strengthens economies by fostering a healthier, more resilient population, decreasing the need for costly treatments, and minimizing disruptions from health crises. Furthermore, it promotes equity by reaching underserved populations and addressing health disparities that perpetuate economic instability. Ultimately, a focus on prevention not only improves individual quality of life but

also builds a robust foundation for sustainable economic growth, creating a future where health and economic stability reinforce one another for the benefit of all.

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