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Critical Analysis of Global Health Issues, Sustainability, and Emerging Healthcare Models

[1]Mohammed Mana Misfer Al Juraib, [2]Ahmed Ibrahim Alzahrani, [3]Kholuood Ali Alfarsani, [4]Rasha Tariq Abduljwad, [5]Waad Naser Alfaraj, [6]Abdulhamid Mulfi Almutairi, [7]Meteb Mohamad S Alyami, [8]Anwar Mohammed Alkhal, [9]Mohammad Fehaid Alhodbi, [10]Naif Mohammed Alruways

[1]Maljreb@moh.gov.sa, Ministry of Health, Saudi Arabia
[2]ahmedia@moh.gov.sa, Ministry of Health, Saudi Arabia
[3]Kalfarsani@moh.gov, Ministry of Health, Saudi Arabia
[4]rabdulljwad@moh.gov.sa, Ministry of Health, Saudi Arabia
[5]Wnalfaraj@moh.gov.sa, Ministry of Health, Saudi Arabia
[6]Aalmutairi170@moh.gov.sa, Ministry of Health, Saudi Arabia
[7]memoalyami@moh.gov.sa, Ministry of Health, Saudi Arabia
[8]aalkhal@moh.gov.sa, Ministry of Health, Saudi Arabia
[9]Malhodbi@moh.gov.sa, Ministry of Health, Saudi Arabia
[10]Nalruways@moh.gov.sa, Ministry of Health, Saudi Arabia

Abstract

Emerging global health problems, ranging from infectious diseases and chronic diseases to health disparities, remain persistent and complex in the delivery of healthcare services across the globe. Along with these problems, new challenges to sustainable healthcare development appear, which gave a start to the search for new models of healthcare based on the principles of effectiveness, accessibility, and affordability. This paper takes a critical look at the current global health challenges, the sustainability concept in the health care delivery system, and new models of health care delivery that seek to solve health inequity and environmental challenges simultaneously. In this paper, references are made to the current publications in the topic area, as well as case study analysis and global health/healthcare sustainability trends, with the aim of outlining possibilities for the development of healthcare systems in the 21st century.

Keywords: Global health, sustainability, healthcare models, health equity, chronic diseases, digital health, universal health coverage.

Introduction

Global organizations of healthcare are under pressure because of growing diseases, an ageing population, and new diseases. These challenges are accompanied by increased concerns regarding the ecological footprint of the healthcare systems and call for sustainability. We have defined sustainable healthcare as a system that is resource-effective in its delivery of care, reduces health inequalities, enhances the health of the population, and has a small 'environmental impact.' With this background, the new trends in the development of healthcare models are progressively becoming oriented toward sustainability and equality.

Healthcare structures have mainly emphasized the treatment of diseases over the last few decades and not illness prevention and wellness. Modern global health challenges asserted the need for the promotion of more combined and long-lasting healthcare models, which include prevention and equity as well as efficiency-oriented healthcare systems. This review analyzes global health challenges, the role of sustainable development in health care, and new models to address them.

Literature Review

Global Health Issues

What is more, the world has undergone many changes in the area of health in the last several

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decades. The disease burden is shifting to NCDs, including cardiovascular diseases, diabetes, and cancer diseases, which are the main causes of death globally. Nevertheless, zoonotic diseases, including COVID-19, malaria, and tuberculosis, are still a major concern in the world, especially among poor countries.

Non-Communicable Diseases (NCDs): WHO estimates that NCDs cause 71 per cent of deaths annually around the world. It is for this reason that these diseases have been linked to such lifestyle aspects as bad diets, lack of exercise, smoking, and taking alcohol. Global trends show that NCDs have become a huge burden and threat to both developed and developing nations.

Infectious Diseases: NCDs present a major problem to emerging economies with high incomes, but contagious diseases are still paramount to many low-income countries. The international health care system still has the indignation of dealing with diseases, among them HIV/AIDS, tuberculosis, and malaria. Furthermore, the breakdown of the global health system due to the COVID-19 virus pandemic has revealed the need to enhance the capacity to respond to not only epidemic threats but also effective containment measures regarding infectious hazards.

Health Inequities: There are disparities in health, another well-known problem of the world's healthcare system. Huge privileged populations and countries have the chance to acquire quality health care. It has been found that low-income populations, and consequently low-income countries, are not sufficiently equipped to access healthcare services such as essential medicines and medical technologies.

Ageing Populations: This means that because the world is ageing, many people living in high-income countries require more healthcare in view of the fact that a large number of older adults have one or more chronic illnesses, their healthcare needs and, therefore, costs and utilization of resources remain high. Increases in ageing populations also pose importance to the healthcare labour market since more healthcare professionals will be required to treat the elderly.

Sustainability in Healthcare

Sustainability in healthcare, therefore, means the ability to provide for the healthcare needs of the current generation in a way that does not diminish the ability of future generations to meet their own healthcare needs. A society that is financially and socially sustainable agrees with the idea of environmental sustainability.

Environmental Sustainability: The healthcare industry worldwide remains one of the leading causes of environmental pollution and has a large carbon footprint, waste stream, and resource consumption. Hospitals, for instance, are special structures that are involved in the use of water, electricity, and other materials in large proportions. Lessening the environmental footprint of healthcare entities is an issue of growing importance, and ideas such as waste minimization, power conservation, and exploitation of renewable power as aspects of sustainable healthcare are gradually shaping the design and running of healthcare facilities.

Financial Sustainability: Another repeated area of concern is economic sustainability, especially in the LMIC context, where healthcare funds are often limited. In such settings, practices that will help healthcare systems operate as financially sustainable organizations capable of delivering quality services to all targeted populations are essential. This is along with the cost of pharmaceuticals, medical technologies, and, most importantly, labour.

Social Sustainability:

Social sustainability in healthcare is understood to refer to equitable access to healthcare regardless of the individual's social stratum, geographical location, or demographic characteristics. Promoting social sustainability entails eliminating health inequalities and following up on equal, efficient health services.

Emerging Healthcare Models

Universal Health Coverage (UHC): UHC is defined as the situation in which all people can obtain the quantity and quality of health services they require without incurring financial risks. It is the responsibility of the government and other stakeholders to solve the challenges of achieving UHC not only by making it available but also by making available appropriate, accessible,

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acceptable, and quality health services for everyone. UHC is a crucial issue in the global health policy system, and many nations are heading towards the accomplishment of such a health care policy.

Digital Health: Telemedicine, mobile health applications, and artificial intelligence are adding value to health systems every day. Digital health technologies' ability to unlock access to the care needed and to allow the optimization of health data employment offers a reasonable chance of slashing healthcare costs and improving the health of the populace. These technologies can then help to fill gaps in access to these services in underserved regions.

Value-Based Healthcare: Value-based healthcare is a new concept in organizational design that aims to enhance the quality of services offered rather than the quantity. This means that instead of asking for payment to be made after service delivery or even for individual procedures that have been offered, healthcare providers are compensated according to how patients respond to care provided to them. It does this in a way that creates incentives to write scripts that promote the objectives of sustainable healthcare systems: prevention and health promotion.

Community Health Models: CHMs are models of primary care with an emphasis on their interaction with public health systems and practices at the community level. These models focus on the preventive approach, promote health, and employ community health workers for care delivery in the deficit regions. Because all the identified models actively involve local populations in creating health promotion campaigns, these models are very sustainable; they can also be easily tailored to local situations.

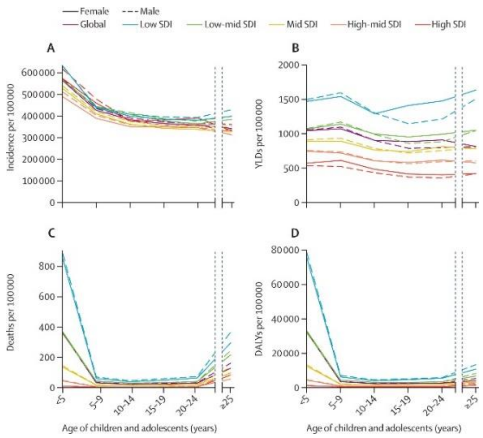
Integrated Care Models: Integrated care systems attempt to combine several kinds of care: acute, primary, and continuing. This model targets increasing or enhancing cooperation between various healthcare providers and reducing confusion between oral and written information, conveying better patient results at minimal cost.

Methods

This critical analysis incorporated quantitative and qualitative methods: secondary research from academic articles, health reports from WHO and the World Bank, and cases of those healthcare systems that use long-term sustainability models. The study was conducted from the year 2000 to 2024 to incorporate the recent trends in m-health utilizing peer-reviewed journal articles, government publications, healthcare policy reports, and grey literature. The countries of interest were at various levels of development, including middle- and low-income countries, and analyses of successes and failures of developing healthcare systems were also included.

Results and Findings

Figure 1: World Burden of Disease Atlas



The chart requires a depiction of trends in the global health burden over the last twenty years by classifying it into NCDs, infectious diseases, and injuries. The chart is also expected to emphasize a rise in the global disease burden from NCDs against contagious diseases and injuries (Kickbusch & Liu, 2019).

Global Health Trends:

In the last two decades, political changes and economic shifts in the relative burden of disease have shaped the global health environment of the twenty-first century. Perhaps the most systematic change in disease profile has been the decline of infectious diseases and the rise of non-communicable diseases (NCDs). The causes for the shift are several, including the ever-rising population ageing rate, increased rate of urbanization, and changes in dietary habits and lifestyle that increase the rate of diseases, including

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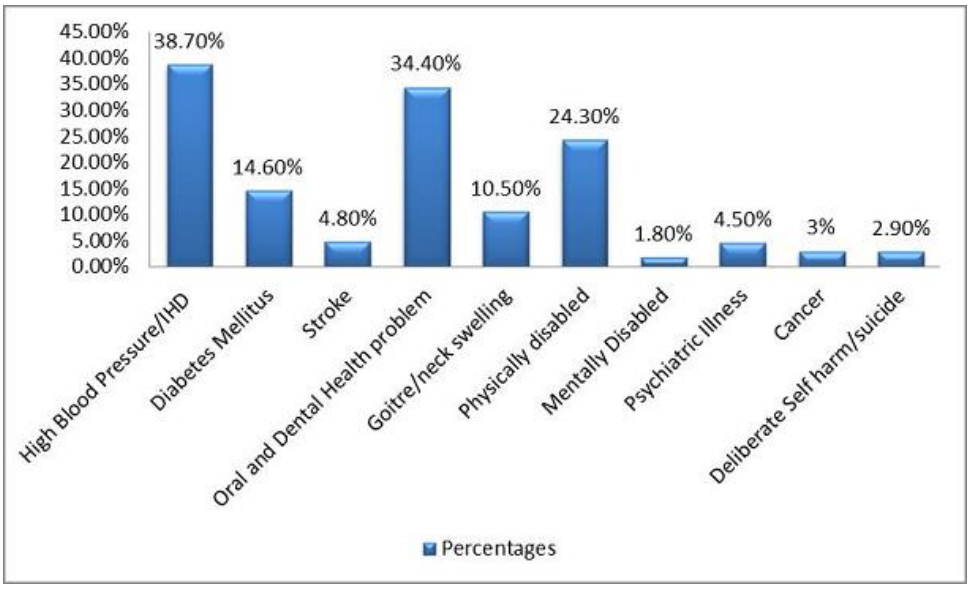
cardiovascular diseases, diabetes, cancer, and respiratory diseases.

Non-Communicable Diseases (NCDs): The WHO estimates that NCDs are responsible for more than 70% of all deaths globally, including cardiovascular diseases, cancers, chronic respiratory diseases, and diabetes. The increase in NCDs has been most pronounced in high-income states. Risk factors include urbanization, occupational hazards, and unsuitable diets, with foods and fruits being exchanged for processed products. But NCDs are also emerging as an enormous challenge in LMICs, where people are now adopting more unhealthy lifestyles.



(Kickbusch & Liu, 2019)

Infectious Diseases: Infectious diseases are, however, less of a burden in the present world than in the past because their contribution to the DALYs has relatively dwindled. This was made possible with increases in vaccination, sanitation, and medical treatments, thus reducing the occurrences of some diseases such as malaria, tuberculosis, and HIV/AIDS in different parts of the world. Nevertheless, infectious and parasitic diseases remain a primary source of death among the poor, especially in SSA and select Asian nations. COVID-19 has also brought into sharp focus how healthcare facilities across the globe are frail and how there is a need to strengthen surveillance and capacity to respond to emergent illness-disease systems.

Injuries: The second major domain of preventable mortality and morbidity relates to injuries, road traffic, and other forms of trauma. The incidence of injuries has not changed significantly in the past few years. Still, these are especially devastating in middle-income countries, including motor vehicle and road traffic accidents, as well as occupational injuries(Kapiriri & Norheim, 2016). They are major causes of premature deaths, are associated with youth, and are a significant problem in public health.

The new global distribution of disease and illness requires a paradigm shift in the health landscape to one that balances infectious disease with NCDs and places increased importance on delivering effective public health messages to the people.

Sustainability Challenges:

With changes in healthcare provision, healthcare facilities cannot only experience rising expectations for demand for services but are also under enormous pressure to reduce the influence they have on the environment. Healthcare systems have a large ecological impact, covering concepts such as the consumption of electric power, utilization of physical resources, and the generation of waste by medical centres, sanatoriums, clinics, and production facilities manufacturing medications.

Energy Consumption: Hospitals are signatories of energy, and medicine energy consumption is high on

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account of the illumination, equipment, heating, and air conditioning systems. The availability of medical technologies round the clock and the necessity to offer service round the clock increase the energy demand. Hospital loads are substantial and increase inventory totals in both energy and emissions, especially in the high-income nations(Kapiriri & Norheim, 2016). While some healthcare institutions have gone a long way in incorporating renewable energy into their use of energy resources, most healthcare organizations use fossil energy.

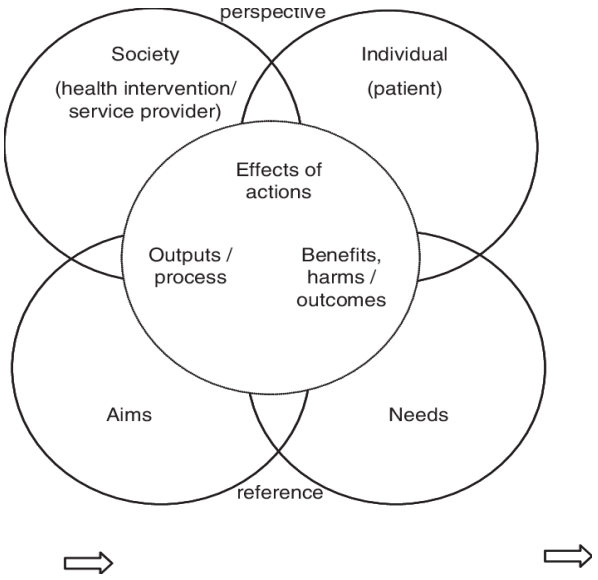
Waste Production: Another sustainability challenge is medical waste, which encompasses single-use plastics, syringes, infected articles, and pharmaceutical wastes. Hospitals and all other healthcare facilities produce huge amounts of waste each day, or maybe every year, depending on the size of the hospital. Medical waste disposal and management issues expose ecosystems to maximal risks and are a threat to public health. Also, medical waste disposed of is burned, which aggravates air pollution and other equivalent related issues. Recycling, using the same materials that are in circulation over and over again, and shifting to eco-friendly products are some ways through which healthcare can begin to control some of the impacts it has on the environment.

Environmental Health Impact: Environmental sustainability in this context goes a notch higher than simple sustainability on emissions and energy use but goes hand in hand with the kind of health outcomes that people are getting. Sustainable healthcare, or the nature of the healthcare sector, can be a direct origin of pollution, climate change, and all forms of environmental degradation that have a ripple effect on health. For instance, variables such as climate change are the cause of heat stroke and respiratory and vector-borne diseases. It is for this reason that tackling the environmental concerns of healthcare is not only an ecological undertaking but a healthcare priority as well.

These are some of the sustainability challenges that the healthcare sector needs to meet by practising green by proposing a green build design, using fewer non-renewable resources, and integrating green technologies. More hospitals are now taking up the green healthcare architecture of hospitals that will efficiently conserve energy, use environmentally friendly materials, and help reduce waste. However, these practices come at a cost, especially in healthcare environments that are stretched to the limit in low-resource settings.

Healthcare Model Effectiveness:

Interest in innovative delivery models, including value-based and digital healthcare, is growing rapidly because the efficacy of these models in achieving desired outcomes while being financially sustainable is now being questioned. These models are intended to organize the field, fix the weaknesses of traditional healthcare systems, and adapt to the needs of the population.



(Campbell et al., 2018)

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Value-Based Healthcare

The system of payment that could previously be seen as the most natural one—fee for service, which rewards providers relative to the volume of services delivered—has been criticized for rewarding the wrong thing—in this case, the volume of services provided rather than their quality. Value-based care brings the model back to patient-centred care, with providers paid according to the results achieved by the care delivered. The value-based approach promotes early interventions since they are less costly than Sacred Heart's previous practice of responding to complications in a patient's condition. Because it focuses on linking pay to health, the profitability of the quality and cost of care in this model is sustainable.

However, there is scientific proof that value-based care can enhance patient success and reduce costs at the same time, especially in conditions like diabetes, hypertension, and heart disease. However, its large-scale applicability for a faceted, complex, and rapidly changing scenario calls for well-developed resources, data, performance, and cultural readiness in healthcare systems. The shift to the value-based care model can be expensive and may sometimes require major changes to insurance systems and remuneration models(Haines & Scheelbeek, 2016).

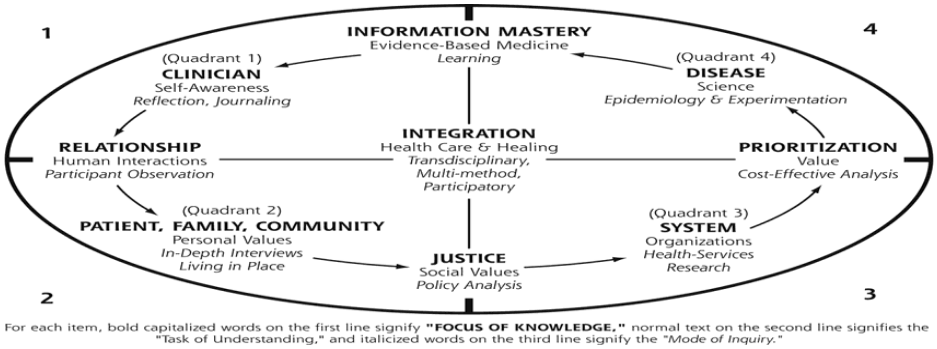
Digital Health

Telemedicine, mobile health applications, and the use of EHR are some of the aspects of digital health technologies that seek to change the trend of healthcare delivery. For instance, telemedicine can improve patients' availability to care since client and professional conversations and evaluations can happen from a distance. Mobile health applications allow patients to monitor their health, receive health advice, and have access to medical services via their palms. Applying AI and ML in healthcare: diagnostic and treatment accuracy and bespoke patient care. The COVID-19 pandemic stepped up the drive towards digitization in healthcare provision, showing that continuity of care is possible even in conditions of lockdowns and social distancing. However, there are existing challenges through which the expansion of digital health is accepted, particularly in LIC(Crisp & Stuckler, 2015). Technological literacy, internet connectivity, and basic technology are the main challenges to the successful implementation of innovations in digital health. However, issues of data privacy/cybersecurity present a major barrier to scaling up digital health solutions.

Healthcare System Integration

Studies have revealed that new-style healthcare delivery systems, such as integrated ones, do lower fragmentation and enhance patient satisfaction. Integrated care is concerned with providing a seamless sequence of care on an ongoing basis at various tiers within the system. The existing model is most suitable for chronic conditions in which patients need care from multiple specialists over longer periods(Frenk & Gómez-Dantés, 2016). It avoids the problem of service duplication, enhances the cooperation between the providers and patients, and improves the experience.

However, care models have particular demands for investment in information technology, training of different caregivers, and smoother cooperation of various actors within the healthcare sector. Such interventions may be difficult to implement, especially in nations with weak, decentralized health systems or inadequate primary health care funding.



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Discussion

This paper points out that although global health problems are becoming increasingly pressing, new models of healthcare may be able to solve them much better.

Sustainability in Healthcare

The urgency of the problem of the environmental sustainability of healthcare systems is growing more and more acute. The increasing quality and years of life and life expectancy are some of the challenges that healthcare systems worldwide are facing as they aim at delivering on their mandate while at the same time realizing the triple AIM of better health, reduced cost, and minimized environmental footprint. There is an opportunity for the healthcare industry to lessen carbon emissions through the use of green hospitals, diminishing wastage, and the use of energy-efficient building structures.

Financial sustainability and social sustainability

Sustainable financing of healthcare systems is therefore aligned to the attainment of UHC. One of the main conclusions reached in this study is that countries that have enacted UHC programs appear to experience lower levels of health inequality and better health. Nevertheless, the funding of UHC is still an area of concern, most probably for lower-income countries(Abimbola, 2019). Likewise, social sustainability implies that health care inequalities and all human beings have to be provided with relevant services.

Newer Forms and Their Effect

New healthcare paradigms that include digital health, value-based care, and community health are valuable in solving the current world's health challenges. However, these models have critical success factors that involve adequate infrastructure, political commitment, and the support of the local people(Abimbola, 2019). The concept of digital health, for instance, brings a great prospect of changing the scenarios of healthcare, especially in rural areas. However, it can cause issues with technological infrastructure, data privacy concerns, and the digital gap that needs to be solved before remote learning will level the playing field.

Conclusion

The critical analysis in this paper shows that global health challenges demand continued and sustainable solutions. Although existing models of innovative healthcare appear to hold much potential, their application presents a range of significant challenges, including the need for financial endowment, infrastructure, and multilateral cooperation ventures. Eco-efficiency and social profitability are the major components of generating healthcare systems in the present and future.

Recommendations

1. Promote Sustainability Practices: Hospitals must implement environmentally friendly measures to run health care facilities, such as buildings that use power efficiently and recycle.
2. Invest in Digital Health Infrastructure: Policymakers at both the national and international levels must fund the development of digital health infrastructure within low-income regions to increase the uptake of health technologies.
3. Support Universal Health Coverage: More efforts should be made to attain universal health coverage with a view to making healthcare available and affordable to populations in reception.
4. Encourage Community Health Models: Future emphasis should be on continuing and improving the techniques represented by community health models, especially in hard-to-reach populations.

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