**Sustainability in Health and Health Care Provision**

**Dr.Tamilselvi. S,** Associate Professor, Saveetha college of Nursing, SIMATS, Thandalam, Chennai-602105,

[tamilselvi.scon@saveetha.com](mailto:tamilselvi.scon@saveetha.com),

**Abstract:** Sustainable healthcare delivers high quality care without damaging the environment, is affordable now and in the future and delivers positive social impact. This course outlines a vision of a sustainable health system based on planetary health principles with a broader focus on health creation at a population level. Health systems consume enormous quantities of materials, energy, chemicals, and water, and they produce vast amounts of waste, much of it toxic. A more efficient and sustainable health system would not use resources in a way that adversely affects the health of the population or prevent tomorrow's health professionals from providing care. Sustainable healthcare can also make a significant contribution to the carbon reductions required by the Paris Agreement, the NHS net zero commitments and the wider UN Sustainable Development Goals. The World Health Organization (WHO) defines a Sustainable Healthcare System as a system that improves, maintains or restores health, while minimizing negative impacts on the environment and leveraging opportunities to restore and improve it, to the benefit of the health and well-being of current and future generations.

**Key wards:** Sustainable, healthcare, population, resources, environment

**Introduction:**

Sustainable healthcare as "healthcare that delivers high quality care in an affordable way, while minimizing the impact on the environment". It describes a system that meets the health needs of the present, without compromising the health of future generations.

Sustainable healthcare is about understanding that our health – and that of our environment around us – is intrinsically linked, and acting in a way that supports both people and planet health.

**Why is sustainable healthcare important?**

Failure to transition to a model of sustainable healthcare will only serve to increase the environmental impact of the healthcare sector. Population growth, unhealthy lifestyles, increases in chronic disease, ageing populations and increased access to healthcare are all expected to drive increases in healthcare demands and resource consumption in the coming decades.

When this is combined with the anticipated healthcare impacts linked to climate change, the need for sustainable transformation becomes clearer and more urgent.

**SUSTAINABLE HEALTHCARE IS UNDERPINNED BY THREE CORE PRINCIPLES:**

1. **Focus on prevention**

Encouraging everyone to take an active role in their own health by doing things like eating a a balanced diet, maintaining a healthy weight, keeping active, and quitting smoking can help to keep them well, which should reduce their use of healthcare services and resources.

Catching diseases at an early stage are also often associated with less resource-intensive care – as well as better outcomes for patients – so screening and testing for conditions like cancer or lung disease is another way to reduce the long-term consumption and burden on healthcare resources

Better management of established health conditions such as heart failure and diabetes can help to reduce complications and subsequently reduce reliance on healthcare services. If these conditions are well-managed, it’s likely to mean fewer trips to hospital to treat acute symptoms or flare-ups, and potentially fewer interventions or medications

**2. Digital Solutions**

Virtual GP appointments, remote analysis of conditions using AI, and accurate digital imaging in dentistry can all support sustainable healthcare .Appropriate treatment option first time, reducing the need for multiple trips to clinics or hospitals and the resources that they consume. The adoption of digital imaging in many of our dental clinics is helping to minimize the environmental impact of traditional X-rays.

**3. Reducing the environmental impact of care**

It is important to combine the provision of high-quality care with a reduction in the environmental impact of this care on the planet.This can be done in many ways, starting with taking obvious steps such as ensuring healthcare settings are powered using renewable energy, improving waste management, and transitioning to sustainable products and suppliers. However, it also includes initiatives such as reducing the length of stay where clinically appropriate and minimizing the number of duplicated tests or unnecessary procedures.

Additionally, investigating the environmental impact of different treatments and interventions alongside their clinical outcomes will support healthcare professionals in making informed decisions about how to treat patients in a clinically effective and sustainable way.

**Health-care quality improvement and sustainability**

A health system that is socially, environmentally, and financially sustainable requires clinical leadership, yet few healthcare workers possess the conceptual framework or practical skills for creating new models of care. Clinicians can protect planetary health as a core part of professional practice by integrating triple bottom-line measures into quality improvement or quality management practices. Initial efforts to integrate sustainability into quality improvement teaching and training have been shown to transform learners’ interest in quality improvement and environmental sustainability. Embedding sustainability principles and techniques into established quality improvement education and practice can operationalize planetary health, building the skills necessary for healthcare system transformation at the speed and scale required.

Improvement in health care is informed by domains of quality, defined as patient experience, safety, effectiveness, efficiency, equity, and timeliness. Sustainability is a domain of quality that must “run through and moderate other domains”, as health care should consider what can be delivered both for patients today, for the population in general, and for future populations

Sustainability in quality improvement (SusQI) is a pioneering framework that embeds environmental, social, and economic sustainability into established quality improvement methodology. It is defined as “an approach to improving health care in a holistic way, by assessing quality and value through the lens of a ‘triple bottom line”

**Environmental Sustainability**

There is an ethical responsibility for a project team to advocate for environmentally sustainable initiatives during design and construction. The primary environmental design strategies for the new hospital are:

* Raising the ground plane of the building to accommodate for sea level rise.
* Minimizing energy use through passive solar design and ventilation.
* Landscaping to improve biodiversity and contribute to passively cooling the building.
* Harvesting rainwater for irrigation and toilet flushing.
* Sourcing renewable building materials to lessen the manufacturing carbon footprint.
* Extreme temperatures (hot or cold) – similar to those we’ve seen around the world in recent years – are well-established risk factors for heart and lung disease3. The intensification of air pollution can affect respiratory conditions such as asthma, and this is being further exacerbated by wildfires which reduce air quality, lead to smoke exposure and increase hospital admissions4. There are also concerns around the impacts of extreme heat on maternal, neonatal and child health5, and greater periods of heat and sun exposure are expected to drive an increase in skin cancer cases
* Global warming is a major factor in the emergence of diseases in parts of the world where they may not have previously posed a significant threat. As global temperatures rise and continents get warmer, diseases that were once confined to tropical and sub-tropical regions are expanding their range7.  For example, mosquitoes, and the potentially deadly diseases they carry (like malaria, dengue and zika), could spread to and survive at higher latitudes and altitudes, while increased rainfall can also support new infection breeding sites8.
* The mental health impacts of climate change are also starting to be understood9, from eco-anxiety right through to PTSD and suicide. It is estimated globally that half of people who survive extreme weather events experience adverse mental health10.
* As well as the direct impacts of climate change on human health, climate change also poses a threat to the delivery of healthcare services and healthcare infrastructure. The rising frequency  and intensity of severe weather events means that hospitals, clinics or care homes may be physically damaged or face power outages. Roads may be flooded or destroyed preventing healthcare professionals from reaching patients, and patients may struggle to access basic healthcare services.

**Social Sustainability**

In a health setting, social sustainability relates to the ability for hospitals and healthcare systems to enhance quality of life and improve well-being in a population. Healthcare architecture facilitates connections, enables access, improves health and enhances equity.

* Encouraging hospital attendance by creating an open central courtyard, symbolizing transparency of the treatment process (less institutional).
* Focusing on providing the most important hospital departments to deliver the crucial services and have a bigger impact on positive health outcomes.
* Accelerating patient recovery rates through infection control and incorporating autogenic design.
* Improving access and equity to healthcare by decentralizing primary care from one main hospital to various smaller sites over the island.

**Economic Sustainability**

There is a strong correlation between poverty and its contribution to negative health outcomes in society. The new Hospital concept addresses strategies for both the procurement of the hospital as well as the subsequent operational costs to ensure fiscal success for the health system as well as the population. These strategies include:

* Capacity building through the construction process to up skill local laborers and support local employment.
* Reduced operational costs through renewable energy and minimizing waste.
* Capacity building of clinical workers through improved services and model of care.

**Measures of Sustainability in Healthcare**

Measures to improve productivity substantially will need to focus on individuals and their communities and on both primary and community care providers. As a generalization, hospital operations do not vary much between very different jurisdictions. Although there will be some opportunities for economies of scope and scale, productivity gains in hospital-based care are likely to be modest. In contrast, the diversity in business and operating models in primary and community care provide an opportunity for improved health system productivity and consequently greater social participation.

Importantly, the core ideology must be revised from a sickness and injury management system to a health (i.e. wellness) system *per se*, and for those people who do have health problems and injuries, a sequential shift in the site of healthcare delivery from hospitals to community settings and into people's homes and a concurrent shift in the locus of control of health and healthcare to individual citizens. It is self-evident that a small lift in health ‘productivity’ by every citizen in a community/country would dwarf a massive lift in productivity by health workers.

**Indian Healthcare Sector and the Sustainable Development**

NITI AAYOG, the main think tank for developmental planning, developed the Index for Sustainable Development Goals (SDGs), which scrutinizes the progress of states and Union Territories (UT) for various parameters which include healthcare, education levels, gender justice, economic growth, institutions, measures to combat climate change, and the environment protection. It was first launched in December 2018 and became a key instrument for tracking the developmental path towards the Sustainable Development Goals in India. This contributed to the development of competition between states and their ranking according to global goals.

The index was developed in partnership with the United Nations. It monitors all states and Union Territories on 115 metrics that are in tandem with the National Index System of the Ministry of Statistics and Program Implementation. This tool is important regarding dialogue, formulation, and implementation of targeted based initiatives. This helps to oversee important gaps in monitoring and to highlights the necessity of having indigenous statistical programmes in India.

It helps identify weaknesses in the implementation of SDGs and the need for developing indigenous statistical systems. Kerala ranked first in the NITI Aayog India SDG Index 2020-21, while Haryana, Mizoram and Uttarakhand are the top achievers in improving their rankings since 2019.

The challenges to the sustainability of health systems globally are such that structural (i.e. organizational) reforms and rearrangements, and even changes in some payment methods will not achieve the desired system stability and growth. Instead, a reimagining is necessary. This will need to include a shift away from pay-as-you-go transactional care delivery to, as much as is possible, a fully forward-funded healthcare system that invests against future health and economic dividends. For publicly funded systems, this will require a social commissioning approach.

 It is inevitable that fully forward-funded healthcare will be increasingly proactive and preventative and will address the entire range of the social determinants of disease. It is possible to make such a transition: the Accident Rehabilitation and Compensation Corporation in New Zealand is a successful example. However, the transition is difficult, can be expensive and will require consideration of a range of broader policy issues. A question to be asked then for different jurisdictions is are there any cheaper and easier-to-obtain ‘halfway houses’ that are likely to achieve most of what will be obtained by way of changed behaviours through a completely fully forward-funded system.

**Conclusion:** Maintaining a sustainable healthcare system while providing high-quality, effective, and safe healthcare is a major economic and social challenge for healthcare services and consumers. The cost-saving potential of a more efficient use of energy and other resources in healthcare systems is clear; yet, there is a long way to go for environment-friendly hospitals, healthcare structures, and clinical laboratories to become the norm. Good collaboration among the EU healthcare systems and a common vision for future actions would help achieve such goals.

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