Chapter 1
Environmental Impact of Healthcare Facilities: Energy, Waste, Water, Emissions

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ABSTRACT

The healthcare industry, which should be the most nature-friendly, is ironically one of the biggest causes of environmental degradation. Worldwide, healthcare is responsible for about 4.4% of the total greenhouse gas emissions, which puts it among the major contributors of climate change. This chapter, through a systems-based analytical framework combining Life Cycle Assessment (LCA), Material Flow Analysis (MFA), and Multi-Criteria Decision Analysis (MCDA), reveals the Healthcare Environmental Paradox the conflict of health promotion resulting in environmental harm. It also talks about the healthcare sector's primary causes of the environmental crisis that include energy consumption, waste generation, water utilization, and emissions from healthcare operations. Pointing out the current shifts in the healthcare sustainability landscape, the chapter wraps up by enumerating the climate change mitigation measures and the upcoming research topics related to the circular economy, green chemistry, digital health, and climate-resilient healthcare infrastructure.

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1. INTRODUCTION

Healers are the ones that make up the healthcare industry. But it may exacerbate illness-causing circumstances due to how it functions. One of the biggest problems with modern healthcare is this seeming contradiction. Worldwide, the healthcare industry is the fifth biggest contributor to climate change, accounting for around 4.4% of all net greenhouse gas (GHG) emissions (Karliner et al. 2019). Not only does this have an effect on the environment, but healthcare facilities also use a lot of resources (both electricity and water) and release harmful pollutants into the air and water.

A big issue in public health is the effect of healthcare on the environment. Malnutrition, malaria, diarrhea, and heat stress will cause an additional 250,000 deaths year between 2030 and 2050, according to a World Health Organization study (2018). Making an ethical argument for change may lead many health implications to be worsened by the same industry that prioritized them.

Focusing on complex systems and their interactions, this chapter delves into the environmental effect of healthcare in detail. Researches, healthcare executives, and legislators may use it to better align healthcare operations with health promotion activities by identifying possible change levers.

2. METHODOLOGY AND ANALYTICAL FRAMEWORK

The effects on the healthcare setting are investigated in this research from a systems thinking vantage point. This framework is based on methodology.

Life Cycle Assessment (LCA): From production to final disposal, we calculate the ecological footprint of healthcare goods and services.

Material Flow Analysis (MFA): Tracking the flow of supplies and resources throughout healthcare facilities to identify potential problem areas that need attention.

Greenhouse Gas Protocol: Consistent with the method for identifying and measuring emissions throughout Scopes 1–3.

Multi-Criteria Decision Analysis (MCDA): Evaluation of treatment alternatives taking into account environmental factors, cost, efficacy, and feasibility of implementation.