Green Practices in Indian Healthcare Sector

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Abstract

With the emergence of industrial revolution, the concept of green practices has grown to become more than just a philosophy but a vital mission across the world. As the world has started moving towards ginormous environmental awareness, the anti - environmental policies practiced in pre-industrialization period and in the initial stages of Industrial Revolution are no longer a feasible option. It has become essential that environment and industrialization must work together to attain sustainable development. Therefore the companies are adopting policies that not only improve their bottom line but also help protect the environment.

The objective of this paper is to present the importance of green practices in healthcare and propose a model for 'dimensions of green hospitals' as well as highlight the efforts taken by Indian healthcare sector to become green and sustainable.

Key Words: green hospitals, Indian healthcare industry, green practices in hospitals, green purchasing, green building

Introduction

Any enterprise that has least negative impact on the global or local environment, community, society, or economy is a green business or a sustainable business. It is a businessthat strives to meet the triple bottom line. Green businesses are characterized by progressive environmental and human rights policies. In general, business is described as green if it meets the following four criteria:

1. It incorporates principles of sustainability into each of its business decisions.
2. It supplies environmentally friendly products or services that replace demand for non-green products and/or services.
3. It is greener than traditional competition.
4. It has made an enduring commitment to environmental principles in its business operations.

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A sustainable business is any organization that performs activities that are environment friendly so as to ensure that all its processes, products, and manufacturing activities address the current environmental issues while maintaining sufficient resources for the future use and making profits. In other words, it is a business that meets the needs of the present world without compromising the ability of the future generations to meet their own needs.

Green practices within a business can create value for all its stakeholders and the environment. A sustainable business must meet customer needs without compromising on the needs of the global or local Environment.

A major initiative of green businesses is to eliminate or decrease the harm caused to the environment by the production and consumption of their goods. Businesses take a wide range of green initiatives. One of the most common examples is the act of "going paperless" or sending electronic correspondence instead of paper when possible. On a higher level, examples of sustainable business practices include: *reconditioning used products* (e.g., tuning up lightly used electronics and electrical for resale); *amending production*

processes in order to reduce waste (e.g., minimizing the waiting time and idle time for machines to ensure energy efficiency); and choosing nontoxic raw materials and processes.

The companies have adopted green practices due to considerable pressure being put upon them from consumers, employees, government regulators and other stakeholders. Some businesses have resorted to green washing, i.e. instead of making meaningful changes in their processes or products they merely market their products in ways that suggest green practices.

Green businesses explicitly integrate strategically relevant environmental, social and ethical goals into the overall business practices so as to support environment sustainability.

Theoretical Framework

Green Business: Literature Review

Many researchers have worked to know about Green businesses. SajalKabiraj (2010) has interpreted green business as being a relatively new and not well defined concept, which can be interpreted in different ways by different people and organizations. What is considered as green by people/organization differs to others. Furthermore, the definition of green business is becoming undermined by a proliferation of green labeling and standards. These standards are leading some consumers to consider "green labels" to simplify a marketing tool with little significance behind it. The basic concept of a green business lies in business sustainability. This can be well understood by both consumers and organizations. But, there is a difference in its implementation to what extent it can be applied in practice. In particular, the business decisions should adopt green are based on good business sense.

Green Practices in healthcare: Literature Review

"Green Hospital", as an approach to address environmental challenges and to meet communities need in health issues, has emerged recently as a try to improve the health, in line with its main mission. In this approach, all the environmental aspects of waste management are important and to be addressed (Mohammad Azmal). (Janet Richardson) has contributed in the field of waste disposal. The disposal of clinical waste is costly to the National Health Service (NHS), with Hutchins and 33 White [1], finding that in 2005 its disposal cost £73m. Therefore during times of increasingly restricted 34 healthcare budgets, it is of growing concern that much of the clinical waste generated in the NHS is 35 potentially recyclable and could thus contribute to cost savings, but in reality little evidence of 36 effective recycling is found.

Corporate Sustainability Strategies

Corporate sustainability strategies aim to take advantage of sustainable revenue opportunities, while safeguarding the business against increasing energy costs, the costs of meeting regulatory requirements, changes in the way customers perceive brands and products, and the volatile price of resources.

Not all eco-strategies can be incorporated into a company's policies and practices immediately. The widely practiced strategies include:

- **Innovation & Technology**
  This introverted method of sustainable corporate practices focuses on a company's ability to change its products and services towards less waste production and sustainable best practices.
- **Collaboration**
  The formation of networks with similar or partner companies facilitates knowledge sharing and propels innovation.
- **Process Improvement**
  Continuous process surveying and improvement is essential to reduction in waste. Employee awareness of company-wide sustainability plan further aids the integration of new and improved processes.
- **Sustainability Reporting**
  Periodic reporting of company's performance in relation to its goals comprises of Sustainability Reporting. These goals are often incorporated in to the corporate mission.

These are some of the strategies which are practiced by companies in order to achieve sustainability.

Benefits of Adopting Green Practices in Healthcare Sector

Several studies have indicated that long-termbenefits can be obtained by hospitals by implementing environmental and social initiatives. In addition to cost benefits, there are also other benefits to choosing an environmentally sustainable strategy. These include:

- **Gaining competitive advantage**
  Green practices help various organisations in gaining a competitive edge over others. Green hospitals will always be more preferred by the patients as the practices will be more sustainable and cost-effective than others. Hospitals will gain more trust and loyalty by the society which in turn will help them grow at a faster pace.

  Patients and their visitors are increasingly sophisticated and "tuned" into current thinking in society and are far more likely to identify with a hospital whose principles and practices are aligned with their values.

- **Employee retention**
  Employees are identified as one of the greatest benefits of going green. Environmental programs have proved to be an effective means of generating enthusiasm and motivating staff to work as a team to achieve a common purpose. Many hospitals use environmental programs as a staff incentive - the financial savings earned are translated into cash or other rewards such as in-house events or trips.

  Employee turnover rate in the healthcare sector is relatively high therefore increasing the retention rate will also save the business money in training of new staff.

- **Awards and recognition**
  Many awards such as LEED certification, ENERGY STAR etc. are given to organisations adopting green practices in their working. Such awards provide a superior recognition to the hospitals and also help in enhancing their reputation which in turn helps them to have a stronger customer loyalty and trust.

- **Regulatory compliance**
  Hospitals must anticipate future regulatory changes and implement initiatives to mitigate the possible costly effects of emerging regulation. Most organisationsare aware that regulations do not have to be a negative restraint on their daily operations - infact, they can offer opportunities to gain an advantage over competitors. Some environmental regulations are good for economic competition as they stimulate innovation that can offset the cost of compliance. By implementing measures in the face of societal and regulatory pressures, unexpected, but substantial cost savings as well as potential new areas of profit may be found.

  The healthcare industry worldwide is increasingly being regulated for:

  → Waste
  → Water
  → Greenhouse gas emissions
  → Energy use.

  Being aware of pending rule changes will allow you to adopt measures in advance, and avoid potentially higher future costs which may be associated with compliance.

- **Risk management**
  Risk minimization is now viewed as increasingly intertwined with good corporate social responsibility and governance. Managing risk is as much about minimizing the potential damage from decisions and actions taken from within a company as it is about managing external exposure.

  Traditionally, a hospital's risk management strategy has been focused on health and safety concerns. In recent years however, environmental and social issues are emerging as a key risk issue for the healthcare sector.

  Environmental risks include:

  → Water and land contamination
  → Air and noise pollution
  → Supply chain environmental practices
  → Waste management

  Environmental risks also have an impact on the cost of capital for organisations of various types

Six Dimensions for a Green Hospital

and sizes, and may affect the value of a company over the long term. Companies that integrate the environment into their business decisions and reduce their environmental risk and potential liabilities are in a better position to secure investment and reduce their financial and reputational market exposure.

- **Increased brand value.**
  Any organisation adopting green practices enhances its brand value and is more preferred by customers, suppliers, investors, employees and other stakeholders in all the spheres. A green hospital receives more loyalty from its patients, better support from the society and increased incentives from the government.

Indian Healthcare Sector

Healthcare has become one of India's largest sectors - both in terms of revenue and employment. Healthcare comprises hospitals, medical devices, clinical trials, outsourcing, telemedicine, medical tourism, health insurance and medical equipment. The Indian healthcare sector is growing at a brisk pace due to its strengthening coverage, services and increasing expenditure by public as well private players.

Indian healthcare delivery system is categorised into two major components - public and private. The Government, i.e. public healthcare system comprises limited secondary and tertiary care institutions in key cities and focuses on providing basic healthcare facilities in the form of primary healthcare centers (PHCs) in rural areas. The private sector provides majority of secondary, tertiary and quaternary care institutions with a major concentration in metros, tier I and tier II cities.

Green Practices in Indian Healthcare Sector

Green practice has emerged as an opportunity for Indian healthcare sector to increase its revenue and ensure sustainable development. Various hospitals in India have now started adopting green practices in their working and have become green hospitals. Some of the hospitals that have taken up green initiatives are Kohinoor Hospital, AIIMS Hospital, Care Institute of Medical Sciences, Abbott India, etc. These hospitals have adopted green practices like use of renewable sources of energy, installing sewage treatment plants, use of LED and CFL, etc.

Conceptual Framework

A hospital would be considered green or sustainable if takes initiatives in the following six dimensions:

- Energy efficiency
- Water conservation

- Waste management
- Green purchasing
- Green building
- Cleaning and housekeeping

- **Energy Efficiency**
  Energy initiatives provide multiple benefits to health care facilities. Cutting energy consumption reduces utility costs and helps the environment by reducing the amount of natural resources used. Creating alternative energy sources on site can reduce utility costs and mitigate power interruptions during disasters. Being recognized for energy savings through programs such as ENERGY STAR and the Leadership in Energy & Environmental Design, or LEED, program can showcase an organization's efforts to the public.

  By reducing a hospital's energy consumption, it is possible to achieve the twin benefits ofsaving money and ensuring a less polluted environment for the local community.

- **Water Conservation**
  Water conservation can help hospitals save operating costs and energy. Decreasing consumption also provides environmental benefits by decreasing the strain on municipal water supplies and reducing the energy needed to treat and deliver water. Hospitals using newer water technologies can also reap clinical benefits, such as better infection prevention that comes with faucets that reduce splashing in hand-washing stations. Hospitals rely on water quality and availability to protect patient health, and should prioritize these needs while reducing wasteful or unnecessary water consumption. As with other sustainability projects, health care leaders should ensure solutions will work in a hospital setting.

  Many parts of the world are water stressed, and the ever-increasing population intensifies the problem. Prudent use of this invaluable natural resource is essential from a resource conservation perspective. Water use is driven by the number of inpatients and outpatients, equipment used, facility size, number and types of services, facility age and maintenance requirements. Other contributors include steam sterilizers, autoclaves, medical processes, heating ventilation and air conditioning, sanitary, x-ray equipment, laundries and food services. It is recommended that all these areas be evaluated to identify activities to help reduce water consumption.

- **Waste Managemenmt**
  The majority of the products procured by health care organizations ultimately become waste. About 80 percent of hospital waste is considered general, unregulated waste, while regulated medical waste and hazardous chemical waste make up a smaller portion of waste by volume. Waste management programs and changes in consumption trends can help a health care organization reduce the amount of waste it generates, saving on both handling and disposal costs and providing environmental benefits. Better waste management systems also can provide safety benefits to patients and staff. Other waste projects proven to be effective in hospitals and care systems include:

  Developing or enhancing an organization's recycling program

  Reducing regulated medical waste generation

  Implementing a battery recycling program

  Medical waste incineration is a leading source of dioxin, mercury and other dangerous pollutants that threaten human health and the environment. It is important to minimize the amount and toxicity of waste generated by the healthcare sector, to ensure the proper management and segregation of medical waste and to eliminate the dangerous practice of incineration by promoting and implementing alternatives, such as non-incineration treatment. Recycling and composting can also be a valuable solution for waste valorization.

- **Green Purchasing**
  Healthcare facilities purchase thousands of different products requested by dozens of different departments. Hospitals may purchase items that are toxic to workers or patients, or have serious

environmental impacts. From eliminating unnecessary packaging, to seeking substitutes for products containing mercury or other toxic substances, purchasing decisions can have a major impact in providing environmentally friendly healthcare facilities. Purchased products must be considered in their totality (life cycle). Indeed, the different stages of the life of a product (manufacturing, marketing, use and disposal) all have an impact on the environment. The purchasing of green products helps to minimize these impacts.

An organization's supply chain can have a major effect on sustainability. Supply chain managers adopting a CQO (cost, quality, outcomes) approach to purchasing consider the purchase price as well as quality for patient care, facility operations and maintenance costs, disposal costs and other factors. This more holistic approach can save hospitals money while reducing the impact on the environment. Environmentally preferable purchasing can lower energy and water consumption, reduce packaging waste and minimize the amount of hazardous chemicals that enter the hospital. A sustainable purchasing policy can be used to enhance or complement other policies. In addition to cost savings and environmental benefits, promoting sustainability decisions for the supply chain can contribute to a positive public image.

- **Green Building**

  Green building, also known as green construction or sustainable building, is the practice of making structures and implementing processes that are eco-friendly and resource-efficient throughout a building's life-cycle: from siting to design, construction, operation, maintenance, renovation, and demolition. This practice expands and complements the classical building design concerns of economy, utility, durability, and comfort.

  Although new technologies are constantly being developed to complement current practices in creating greener structures, the common objective is that green buildings are designed to reduce the overall impact of the built environment on human health and the natural environment by:

  - Efficiently using energy, water, and other resources
  - Protecting occupant health and improving employee productivity
  - Reducing waste, pollution and environmental degradation

  Green building practices aim to reduce the environmental impact of new buildings. Buildings account for a large amount of land use, energy and water consumption, and air and atmosphere alteration. Considering the statistics, reducing the amount of natural resources buildings consume and the amount of pollution given off is seen as crucial for future sustainability, according to EPA. The building sector alone accounts for 30-40 percent of global energy use. Over 80 percent of the environmentally harmful emissions from buildings are due to energy consumption during the times when the buildings are in use.

- **Cleaning and Housekeeping**

  Cleaning in hospitals is an important issue. For example, many nosocomial infections occur in hospitals (hospital-acquired). Thus, hospital staff and administrators often react anxiously to suggested changes in cleaning practices. Nevertheless, cleaning products are a major contributor to indoor air quality issues in closed environments. Many contain high levels of volatile organic compounds (VOCs) which can give rise to respiratory irritation, headaches and other symptoms for workers and building occupants. All disinfectants are intentionally toxic to microorganisms, and none can be accurately qualified as "green".

General Areas for Improvement

- Regular monitoring of energy consumption by checking the electricity meters
- Installation of energy-efficient equipments
- Check the water supply system for leaks and turn off unnecessary flows

- Reading water meters regularly in order to identify leaks
- Recycling and reduction in water usage wherever possible, consistent with health requirements.
- Establishing a framework of policies and procedures with an overall goal of zero waste
- Recognising waste categories and segregation: domestic wastes (paper, glass, plastics, etc.); regulated medical waste (bio-hazardous waste, potentially infectious medical waste, biomedical waste, etc.); hazardous waste; low-level radioactive waste
- Implementation of non-incineration technologies: thermal, chemical process, irradiative or biological processes
- Promote recycling of wastes such as paper, plastics, glass, batteries, etc.
- Avoid buying unnecessary supplies and purchase only what is needed
- Purchase in bulk instead of individually packaged items
- Use of recycled contents like office paper, paper towels, etc.
- Consideration of water and energy consumption before making any purchase decision of a new equipment
- Limit the use of disinfectants

Green Intiatives can be taken in the Areas of:

Heating And Air-conditioning

- Use solar collectors for hot water
- Use night-time temperature lowering thermostats
- Install several small boilers instead of one large boiler for load dependent operation
- For air-conditioning, check specific room parameters (temperature, humidity, air exchange)
- Adjust boiler and cooling tower blow down rate to maintain total dissolved solids at levels recommended by manufacturers' specification
- Clean and change the air conditioner filters regularly
- Shut off water-cooled air conditioning units when not needed, or replace water-cooled equipment with air-cooled systems

Cafeteria & Food Services

- Invest in high-performance cooking units and refrigerators when replacing equipment
- Defrost refrigerators and clean the door seals regularly
- Wash only full loads in the dishwasher
- Reuse the rinse water from the dishwasher as flush water in garbage disposal units
- Turn off the continuous flow used to wash the drain trays of the coffee/milk/soda beverage
- Use fresh products with little or no preservatives and food-coloring and with as little packaging as possible
- Equip the kitchen with energy-efficient appliances

Lighting

- Reduce general lighting during daytime and make sure that exterior lighting is switched on only at night
- Use energy-saving bulbs, especially in high consumption areas
- Install timers and movement detectors to reduce lighting time

Laboratories & Patient Care

- Install automatic valves on film processing or X-ray equipment to stop water flow when equipment is not in use
- Reduce flow to surgical vacuum pumps to acceptable minimum level and maintain proper operation
- Overhaul faulty steam traps on sterilizers
- Promote recycling of paper, X-ray films and solutions, packing material, etc.
- Reprocess single-use devices such as arthroscopic shavers, blood pressure cuffs, soft tissue ablators, scissors and staplers, etc.
- Check for alternative for products containing Latex, PVC/DHEP, mercury, flame retardants, etc.

Green Practices in Healthcare Sector in India

No.	Hospital	Green Healthcare Practices
1.	Siemens, Gujarat	● Use of LED and CFL ● Installation of solar panels ● Use of recycled paper, X-ray films and solutions ● Shift from chemical based disinfectants to biocides
2.	Care Institute of Medical Sciences (CIMS), Ahmedabad	● Green building (use of fly ash bricks in construction and more solar energy absorbing structure) ● Energy efficiency (solar panels for air conditioning and lighting) ● Waste management (recycle of biodegradable wastes) ● Water conservation (rain water harvesting, Sewage Treatment Plant) ● green purchasing (use of biodegradable material for flooring)
3.	Kohinoor hospital, Mumbai	● Green building (a rooftop garden, structure to capture maximum sunlight) ● Energy efficiency (use of led and cfl, smart lighting, solar heaters, motion sensors) ● Water conservation (rainwater harvesting, sewage treatment plant) ● cleaning and housekeeping (less use of disinfectants, use of most modern cleaning equipments)
4.	AIIMS, Delhi	● Waste management (3Rs, deal with nitrous oxide and other waste anaesthetic gases)
5.	Abbott India, Faridabad	● cleaning and housekeeping (use of microfibers as dusters and biocides as disinfectants) ● waste management (scavenging system) ● green OT (Green House Gas surveyors)
6.	Kovai Medical Centre and Hospital, Coimbatore	● energy efficiency (use of renewable energy resources) ● cleaning and housekeeping (technology upgradation)
7.	Jehangir Hospital, Pune	They have specifically worked on area of reducing their energy consumption: ● electrical energy consumption by 12.66%, ● water energy consumption by 53.9%, ● specific energy consumption for air conditioning by 17.9% and lighting by 5.99%.

- Check for less packaging and reusable tools

Laundry Services

- Avoid wasting energy from over-drying the laundry by fitting humidity sensors to dryers
- Investigate a treated rinse water system to reuse rinse water for other purposes or recycle it in the wash cycle
- Instruct cleaning crew to use water efficiently for mopping
- Equip the laundry room with machines in energy class A
- Avoid using detergents containing bleach (products of chlorine), phosphate, EDTA (ethylenediaminetetraacetic acid), NTA (sodium nitriloacetate), etc.
- Prefer low temperature detergents Cleaning & disinfection
- For each product in use, check if there is a "less-toxic" substitution

Cleaning and Disinfecting

- Use the appropriate product for target microorganisms
- Use the least toxic antimicrobials to disinfect or sanitize
- Use products at the appropriate concentration and for the proper residence time
- Identify the organisms you need to eliminate, such as those in blood and vomit or general pathogens
- Be sure to follow the instructions carefully, and comply with the recommended time it takes for the biocide to effectively eliminate the targeted organisms
- Determine where to use disinfectants by carefully dividing your facility into risk areas
- Identify those areas that need the highest level of disinfecting and separate them from areas that can simply be thoroughly cleaned or that need to be sanitized (food service areas)

Purchasing

- Buy reusable ink and toner cartridges
- Purchase paper with at least 50% recycled fibers or non-whitened or chlorine-free bleached paper
- Prefer rechargeable batteries
- When purchasing new equipment, take their water and energy consumption into consideration

Concluding Remarks

The environmental awareness in the society has led to the adoption of green practices in every sphere. The healthcare sector has taken initiatives to become sustainable in order to reap the long-term benefits provided by the environment. The various interest groups of the society such as customers, employees, NGOs, government and others have become more concerned about the environment and therefore the healthcare institutions are answerable for all their practices. Hence it has now become essential to adopt green practices in their working.

Green initiatives in healthcare have already been adopted in other developed countries such as USA, Japan, Singapore, UK, etc but now Indian hospitals have also taken measures to adopt such practices which make them sustainable in the long run. The hospitals in India have incorporated practices such as green purchasing, water conservation, waste management, etc. in order to become green hospitals. The concept of green healthcare is now receiving undivided attention and the people are also now aware about the benefits of adopting such a concept.

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