Original Article

HOSPITAL WASTE MANAGEMENT AND ENVIRONMENT PROBLEMS IN INDIA

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Abstract

This paper's primary goal is to provide an overview of India's hospital waste management and environmental issues. This study's goal is to examine the practises and compliances in the health care waste management system. The majority of nations, particularly emerging nations, are dealing with a dire predicament brought on by environmental contamination from pathological waste generated by growing populations and the ensuing rapid expansion of hospital units. More than 23,000 basic health facilities, more than 15,000 small and private hospitals, and around 6 lakh hospital beds are all present in India. Hospitals, clinics, and other medical and veterinary institutions are required by India's Biomedical Waste (Management and Handling) Rules 1998 to dispose of biomedical wastes rigorously in accordance with the regulations. Hospitals did not appropriately manage medical waste, according to the limited studies on the topic that have been done in India. The market revenue for hospital waste management in 2008 was 8% of India's overall waste management revenue; the predicted growth over the next five to six years is expected to be approximately 20%. While many institutions contribute to environmental pollution, hospitals, dispensaries, medicinal shops, and clinics run by doctors and other paramedical staff have recently come to the attention of environmentalists as an overlooked source of hospital waste pollution. In addition to preventing environmental contamination, safe handling, segregation, storage, destruction, and disposal of hospital waste assure mitigation and minimization of the health hazards associated with contact with the potentially hazardous material. Negligent handling of medical waste disposal can result in serious infections and pose a risk to the public, the environment, and those managing it. Recycling and waste reduction are still not widely promoted, which has substantial effects.

Keywords: Hospital waste, Waste management, Infectious wastes, Non-infectious wastes and Waste minimization

Introduction

In the last two decades, it has been determined that inadequately kept, transported, and disposed of medical wastes are one of the main issues that have a detrimental effect on both human health and the environment. It is now widely known that some types of medical waste are among the most toxic and possibly lethal of all trash that develops in communities. The World Health Organization has long argued that medical waste should be treated as a specific kind of garbage. Numerous institutions contribute to environmental pollution, but recently attention has been drawn to a field that also contributes to health pollution.

Hospitals, dispensaries, medicinal shops, doctor's offices, and other facilities with paramedical staff are among those that generate waste in the area of health care and catch the attention of environmentalists. Any garbage produced by medical facilities, such as clinics, medical laboratories, hospitals, and facilities for using animals in testing, is referred to as hospital waste.

In addition to being toxic and polluting the environment, hospital waste also poses a threat to people, animals, and plants. Millions of tonnes of garbage are generated daily by the numerous hospitals and other medical facilities

throughout the nation. An alarming amount of the waste is left on the ground, causing environmental issues. Hazardous wastes come from the healthcare industry. Even in low concentrations, these are harmful to the environment. Therefore, it is essential to take preventative measures to ensure that hazardous waste components are rendered harmless through adequate technology treatment and secure disposal techniques.

In today's cities, the issue of healthcare waste has taken on enormous proportions. Of the overall hospital waste, about 1.50 kg per head/per day were created; these wastes were contaminated with microorganisms that spread disease. As an illustration, consider a patient receiving treatment at a hospital and a regular individual going about his daily business. A hospital patient needs an atmosphere that is increasingly clean and free of contamination. He demands air. However, the surroundings of hospitals, particularly those run by the government, are so contaminated by hospital waste that it is quite difficult for a regular person to visit a patient there. The majority of hospitals dispose of their waste in open areas or with municipal solid waste, which is bad for both the environment and people's health.

Health care facility trash is often divided into infectious and non-infectious categories. Hospital wastes are what are known as the infectious health care wastes and are thought to be potentially dangerous in nature. Public health and environmental risks are posed by the dumping of untreated medical wastes combined with non-infectious hospital wastes or other general municipal wastes. The spread of various infectious diseases is frequently attributed to the careless dumping of untreated medical waste. Additionally, it caused hospital acquired infections, or nosocomial diseases, among the medical staff who handle these wastes at the point of creation. Additionally, this poses a risk to those responsible for segregating, storing, transporting, treating, and disposing of medical waste. In addition to the items mentioned above, rag pickers also collect a sizable quantity of medical wastes such disposable syringes, saline bottles, I.V. fluid bottles, etc. that are then recycled back into the market without being cleaned. Adopting a suitable, environmentally sound strategy for getting rid of medical waste is consequently essential.

Infectious wastes and noninfectious wastes are the two forms of hospital care wastes.

Waste produced in isolation wards

The percentage of infectious waste in the total trash produced by the healthcare industry is close to 15% to 20%.

Non Infectious Hospital Trash: Office and kitchen waste are the two primary categories of non infectious waste. It resembles domestic rubbish. Nearly 85% to 80% of the total wastes produced by a healthcare facility are non-infectious wastes. Waste that isn't infectious becomes contagious in the absence of effective segregation, endangering society's environment.

Literature review

There aren't many analytical studies in the literature that are specifically focused on health care waste management in India.

Srinivasa Chary (2001) claims that the issues with disposing of medical waste exacerbated by the rapid and unchecked expansion of healthcare facilities, the rise in the pace of waste production as a result of the sharp rise in the cost of disposable medical supplies, and the use of dangerous and unlawful recycling techniques. The general population, particularly health care personnel, municipal workers, and rag pickers participating in garbage recycling, may be at risk for health problems as a result of this condition.

According to Santappa (2002), inappropriate treatment of hospital wastes puts waste handlers and the nearby community at danger of contracting infectious diseases. Possible modes of exposure that could result in both acute problems and chronic consequences include skin contact, injection, and inhalation. If containers and plastic materials that are likely to be recovered by scavengers are not thoroughly sanitised before recycling or reuse, they could spread communicable diseases.

Infectious waste was separated, collected, transported, stored, and finally disposed of in accordance with standard procedures. The final method of disposal was incineration in accordance with the Environment Product Act Rules of 1998. The study by Gupta (2006) says that the occupier's employees were taught how to handle these biohazardous waste materials properly. This hospital also makes its facilities available to other people by burning trash from nearby clinics and hospitals.

Emergency clinic squander the board, as characterized by the Service of Wellbeing and Social Government assistance in 2006, involves all activities connected with squander age, isolation, transportation, capacity, treatment, and last removal of all waste kinds delivered in emergency clinic offices, every one of whose stages calls for specific consideration. This will ensure that the necessary inputs, actions, and outcomes for the secure management and disposal of medical waste are in place.

Current hospital wastes scenario

India generates approximately 3 million tonnes of hospital waste annually, and this number is expected to rise by 8% annually. If not managed properly and disposed of carelessly, medical wastes may have a negative impact on both human health and the environment. Considering the data at hand the State Pollution Control Boards' data (2007-08) There are 52,001 (53.25%) healthcare facilities operating without receiving permission from their respective SPCB/PCC. Out of the 506.74 tonnes of waste produced per day, 288.20 tonnes (or 56.87%) are treated at one of the 159. Captive treatment facilities or common biomedical waste treatment facilities The nation has 8,038 shredders, 2218 autoclaves, 192 microwaves, and 151 hydroclaves in addition to 602 biomedical waste incinerators, which include both common and captive incinerators. About 424 (70.4%) of the 602 incinerators have installed air pollution control systems, while 178 (29.6%) continue to operate without them.

Uttar pradesh hospital waste management

In Uttar Pradesh, there are 243 government hospitals and 1405 private hospitals. The United States has roughly 96,000 hospital beds. The Bio Medical Wastes (Management and Handling) Rules, 1998 have been identified as having the Chairman of the Uttar Pradesh Pollution Control Board as the required authority for approving and implementing them. The Uttar Pradesh Pollution Control Board is taking the necessary actions for the safe environmental management of hospital wastes. The organisation is also keeping an eye on current procedures and assessing different options for treatment and disposal for the safe destruction of hospital wastes, taking into account both the environmental impact and the financial implications. With a capacity of 50 kg per hour apiece, common incineration facilities have been made available for 58 hospitals in Salem and 78 hospitals in Madurai. Currently, 50–55 percent of biomedical waste is collected, separated, and managed in accordance with these regulations. Along with municipal solid waste, rests are disposed of.

India's hospital waste problems

To process 420561 kg of biomedical waste each day in compliance with BMW Regulations.

There will be a significant growth in the number of CBMWTFs (Common Bio Medical Wastes Treatment Facilities). There are already 157 facilities that cannot handle the entire generation of bio medical waste.

The CBMWTF will be established as a public-private partnership.

Toxic biomedical wastes will be destroyed using new technology, which will be encouraged.

Out of 84,809 healthcare facilities, SPCBs have issued 43,075 authorizations for the management of biomedical waste. From the 420461 kg of garbage produced each day, only 24 0682 kg are processed. 48,183 of the 84,809 hospitals either contract with private organizations or use the 170 common biomedical waste treatment facilities.

There are 391 incinerators equipped with APCB, 2562 autoclaves, 458 microwaves, 145 hydroclaves, and 6047 shredders operating. Additionally, for payment default, 14,959 hospitals have received show-cause notices. Surveys by a number of organizations indicate that Indian healthcare facilities do not pay enough attention to waste management. Following the publication of the Biomedical Waste (Handling and Management) Rules, 1998, hospitals are gradually streamlining their waste collection, treatment, and disposal procedures.

Management of hospital waste and environmental problem

The following environmental issues are caused by inappropriate health care waste management disposal:

infection transmission through contact or injury between sweepers or rag pickers and medical or non-medical personnel, particularly from sharps; Infection spread by recycling disposable items like hypodermic needles, tubes, blades, and bottles without permission; infection transmission among rag pickers and medical or non-medical personnel through contact or injury; transmission of disease through contact with infectious waste; transmission of disease through contact with infectious waste; reaction caused by taking medications that have expired.

Waste management, which entails properly planning the collection, transportation, processing, and disposal of waste, is an essential component of environmental protection. Both improving the immediate environment and ensuring that the waste does not pose a health risk to humans are the goals. A component of waste management that contributes to keeping hospitals clean and safe for patients, staff, and communities is health care waste management. Emergency clinic squander the board incorporates arranging and buying, staff conduct and preparing, the legitimate utilization of hardware, apparatus, and prescriptions, the utilization of fitting isolation strategies, volume decrease, treatment, and garbage removal.

The health problem and hospital wastes

In a healthcare facility, the most vulnerable individuals are: Patients and visitors Employees of ancillary services such as laundry and medical supply stores, people in charge of collecting and transporting waste, and service personnel involved in waste treatment and disposal of health units. Medical staff, healthcare unit employees, and maintenance personnel

Hepatitis B virus (HBV), hepatitis C virus (HCV), and human immunodeficiency virus (HIV) are the three diseases that are most frequently transmitted to healthcare professionals. Estimates indicate that, out of the 35 million healthcare professionals worldwide, 3 million have close contact with bloodborne infections on a yearly basis, with 2 million contracting HBV, 0.9 million HCV, and 170,000 HIV. Additionally, there is a risk for those working with medical waste collection and handling.

The cost of managing hospital waste

When developing a waste management strategy, it is essential to take into account financial factors like investment, cost, pricing, segregation, dumping, and disposal, in addition to management strategies. A poor collection system and services, as well as improper disposal at public dump sites, characterize the current methods for managing medical waste. Hazardous, hospital, and household wastes are mixed on the jobsite. As a result, the best system with the lowest investment may emerge from this effort.

A significant portion of a hospital's overall budget is dedicated to the construction, operation, and upkeep of a waste management system if the Bio Medical Waste Handling Rules of 1998 are to be fully implemented. The government of India estimated that a super specialty teaching hospital with 1,000 beds would cost Rs. in a government hospital waste management pilot project. 85 lakhs in development costs, including the cost of the final clinical garbage removal from the site. To manage waste, hospitals must incur two distinct costs: costs both

internal and external Security measures like segregation, mutilation, disinfection, internal storage, and transportation all come with hidden costs inside the organization.

Storage and segregation of health care waste

Hospital waste segregation should be investigated since facility standard operating procedures have a direct impact on the kind and cost of health care waste treatment. Each type of garbage must be kept separate and in a suitable bag or container. This bag or container must possess a number of qualities in order to successfully retain the intended volume and weight of garbage without leaking. The container needs to have a cover that is preferably foot operated. A bag or container must be sealed when it is 3/4 full and the proper label must be attached. According to the law, separate containers with prominently displayed colour codes have been set up in the storage area: yellow for hazardous medical waste and black for non-hazardous trash.

Collection

Colored bags should not be placed directly in vehicles; instead, they should be maintained in containers of a matching colour.

Sharps must be gathered in containers that can withstand punctures.

Designate temporary storage at the healthcare facility.

Transporting and Handling of Hospital Wastes

There are three parts to this activity: gathering various waste types from hospital waste storage bags and containers, transporting and intermediately storing the separated garbage inside the facility, and transporting the waste outside the facility to the treatment or final disposal. Safe transportation must be used to deliver the biological waste to the treatment or disposal facility site. The car should meet certain requirements; it should be protected and guarded from unintentional door opening, leaks, etc. In order to be easily cleaned and disinfected, the container's interior should not have any sharp edges or corners.

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Treatment and disposal of hospital waste

Different techniques have been created to make biological waste both aesthetically pleasing and harmless to the environment. According to the many forms of waste produced in hospitals, the biomedical waste regulation specifically lists the preferred solutions for treatment and disposal. Incineration, autoclave treatment, hydroclave treatment, microwave treatment, mechanical/chemical disinfection, sanitary and secure land filling, and general waste treatment are only a few of the new processes and technologies that have been developed.

Findings

In recent years, India has paid close attention to the safe handling of hospital waste. The correct processing, segregation, and disposal of hospital wastes are given top priority. Recycling and waste reduction are still not widely publicised. The negative effects on the environment and human health caused by improper handling and disposal techniques, the relevant institutions and measures made, and the policy framework were the key concerns.

Conclusion

In addition to reducing population exposure to resistant germs and the spread of HIV/AIDS and hepatitis through contaminated needles and other improperly handled or disposed of medical waste, an effective hospital waste management system can also aid in the control of illnesses. Regarding the environment, a proper and sustainable management system for hospital waste will prevent dangerous environmental releases of pollutants like dioxin, mercury, and others from having a negative long-term health impact. The usage of plastics in society is a focus of waste management concern, both in terms of volume and toxicity. In the past, medical waste was frequently mixed with household waste and dumped in landfills for municipal solid waste, but in recent years, growing public outrage over the improper disposal of hospital waste has sparked a movement for the Indian Government to regulate the waste more systematically and strictly.

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