

Bio-Medical Waste Management Process In Hospital Industry- A Comparative Study On Apollo & Suyash Hospitals at Nashik

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Abstract—Healthcare is an essential aspect of life; these activities generate a large amount of waste called biomedical waste. This waste generated by healthcare activities can be hazardous or toxic or something deadly as it is contaminated by disease carrying pathogens which can infect patients, healthcare workers and other public present near there. Biomedical waste management has recently emerged as an issue of major concern not only to hospitals, nursing home authorities but also to the environment. The bio-medical wastes generated from health care units depend upon a number of factors such as waste management methods, type of health care units, occupancy of healthcare units, specialization of healthcare units, ratio of reusable items in use, availability of infrastructure and resources etc. In this paper, firstly an understanding of biomedical waste management process at hospital Industry in India has been done. Secondly, a case study on the cost analysis of biomedical waste management at Apollo & Suyash Hospitals at Nashik has been reported.

Keywords: Bio-waste management, Hospitals, Cost.

I INTRODUCTION

The proper management of biomedical waste has become a worldwide humanitarian topic today. Although hazards of poor management of biomedical waste have aroused the concern for all world over, especially in the light of its far-reaching effects on human, health and the environment.

Bio medical waste is any solid or liquid waste which is generated during the diagnosis, treatment or immunization of human beings or animals. Waste generated in the health care facilities categorized in general waste, chemicals, sharps, potentially infectious waste, pharmaceuticals and radioactive material. Also these bio medical wastes consists human anatomical body parts, discarded medicines, cytotoxic drugs, cotton, dressings and liquid waste.

This waste generates from hospitals, health centers, medical colleges, research centers, blood banks, clinics, funeral services and vaccination centers. According to World Health Organization 20% waste is hazardous and remaining 80% waste is considered as domestic waste. Management of bio medical waste is an integral part of infection control and hygiene program in health care setting which is still in its infancy all over the world.

The problems of the Bio medical Waste disposal in the hospitals and health care institutions have become issues of increasing concern. Most countries of the world are facing the grim situation arising out of environmental pollution due to pathological waste arising from increasing population and the consequent rapid growth in the number of health care centers. India generates around three million tons of Bio medical waste every year and the amount is expected to grow at eight per cent annually.

II DEFINITION

(1) The Government of India (notification, 1998) specifies that Hospital Waste Management is a part of hospital hygiene and maintenance activities. This involves management of range of activities, which are mainly engineering functions, such as collection, transportation, operation or treatment of processing systems, and disposal of wastes.

(2) World Health Organization states that 85% of hospital wastes are actually non-hazardous, whereas 10% are infectious and 5% are non-infectious but they are included in hazardous wastes. About 15% to 35% of Hospital waste is regulated as infectious waste. This range is dependent on the total amount of waste generated (Glenn and Garwal, 1999).

III CLASSIFICATION OF BIO-MEDICAL WASTE

The World Health Organization (WHO) has classified medical waste into eight categories: General Waste, Pathological, Radioactive, Chemical, Infectious to potentially infectious waste, Sharps, Pharmaceuticals, Pressurized container

IV SOURCES OF BIOMEDICAL WASTE

Hospitals produce waste, which is increasing over the years in its amount and type. The hospital waste, in addition to the risk for patients and personnel who handle them also poses a threat to public health and environment.

Major Sources- Govt. hospitals/private hospitals/nursing homes/ dispensaries, Primary health centers, Medical colleges and research centers/ paramedic services, Veterinary colleges and animal research centers, Blood banks/mortuaries/autopsy centers, Biotechnology institutions & Production units.

Minor Sources- Physicians/ dentists' clinics, Animal houses/slaughter houses, Blood donation camps, Vaccination

centers, Acupuncturists/psychiatric clinics/cosmetic piercing, Funeral services, Institutions for disabled persons. **Table No .1**

Capital costs	Suyash Hospitals (Amount in rupees)	Apollo Hospitals (Amount in rupees)
Sharp containers	48534	59670
Waste Bin	9800	3750
PPE (shoes)	2000	1300
Trolleys	16000	13500
Transport Bins	28000	22000
Signboard / IEC Material	-	2000
Total capital cost in (A) in Rs.	104334	102220

V NEED FOR AN EFFECTIVE BIOMEDICAL WASTE MANAGEMENT SYSTEM IN HOSPITALS

The reasons due to which there is great need of management of hospitals waste are:

- Injuries caused from sharps leading to infection to all categories of hospital personnel and waste handler.
- Nosocomial infections in patients with inadequate infection control practices and poor waste management.
- The risk of infection outside the hospital for waste handlers and scavengers and at time general public living in the vicinity of hospitals.
- The risk associated with drugs, hazardous chemicals, to persons handling wastes at all levels.
- Repackaging of the disposable and marketing by unscrupulous elements without even being sterilized.
- Drugs and medicines which have been disposed of, being repacked and sold off to unsuspecting buyers.
- The risk of pollution of air, water and soil is directly due to waste, or due to defective incineration emissions and ash.

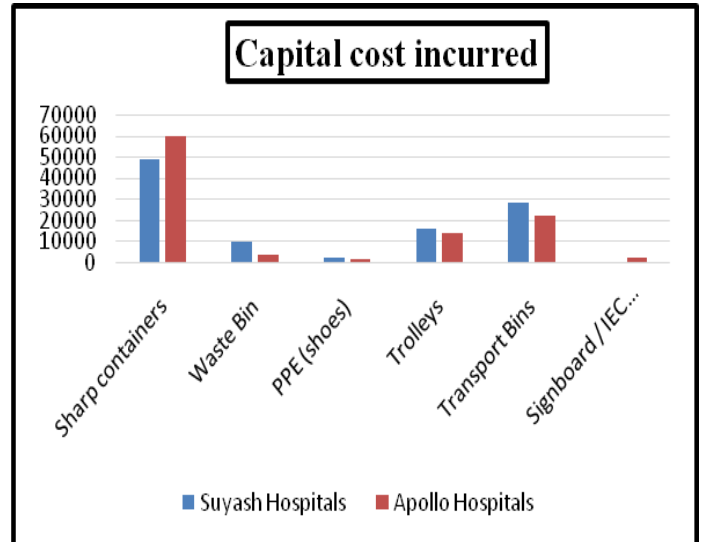
VI DATA ANALYSIS

Research is based on secondary data. The data has been collected from financial reports of the both hospitals for the year 2016-2017 & Magazines, Journals and manuals.

VII COMPARATIVE STUDY OF BIO-MEDICAL WASTE MANAGEMENT AT SUYASH HOSPITAL & APOLLO HOSPITAL

Capital Costs Incurred for the Management of Bio-Waste in Two Hospitals in the year 2016-17:

Graph no.1



(Source: Secondary Data)

This table helps to analyze the actual cost incurred for the management of the BMW in hospitals. It consider the equipment used for the disposal of the waste e.g. sharp containers, waste bin, trolleys, transport bins etc. It shows that Suyash hospital is using more material than Apollo so its capital cost is more. The capital costs for waste management is more for Suyash hospital compared to Apollo. It was observed that Suyash follows BMW management process more effectively.

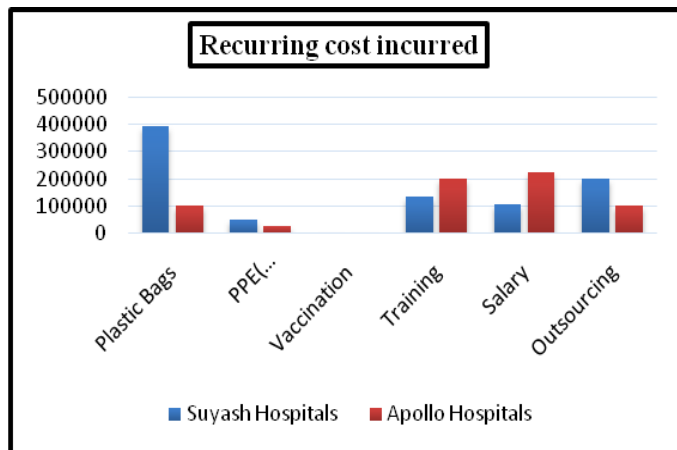
Recurring cost incurred for the management of BMW in two hospitals in 2016-17:

Table no: 2

(Amount in rupees)

Recurring Costs		Suyash Hospitals	Apollo Hospitals
Plastic Bags	391260	102200	
PPE(Gloves, Face mask, apron)	51533	25417	
Vaccination	2700	2400	
Training	135640	198300	
Salary	106000	221760	
Outsourcing	199205	99603	
Total Recurring costs in (B) Rs.	886338	649680	

Graph no: 2



(Source: Secondary Data from financial reports)

The above table shows the cost incurred for the management of BMW. It represents that recurring cost is more for Suyash hospital than Apollo. It also shows that Suyash are providing outsourcing facility better than Apollo hospital but Apollo offers good salary benefits for their employees. This table helps to analyze the other cost which is incurred for the application of the BMW management within the hospitals like training, salary, outsourcing etc.

Total Cost Incurred for the Management of BMW and Cost per Bed/month for the year 2016-17

Table no. 3

Total cost	Suyash hospital	Apollo hospital
Total cost = cost(A) + cost(B) in rupees	104334+886338 =990702	102220+649680 =751900
Cost per bed/per month in rupees	990702/150 beds =550.39rs.	751900/100 beds =626.58rs.

(Source: Secondary Data)

The above table shows that calculation of the both costs - capital and recurring cost of BMW management. It indicates the overall cost of the whole process which is undertaken by both hospitals while application of the BMW management. It represents cost per bed /per month is lower for Suyash compared to Apollo and it also shows that the bed strength of Suyash is more than Apollo though they are using all expenses effectively compared to Apollo.

VIII CONCLUSION

Each and every healthcare facilities which generates biomedical waste, needs to set up requisite treatment facilities to ensure proper treatment of wastes and its disposal so as to minimize risk of exposure to staff, patients, doctors and the

community from biomedical hazards. Safe and effective management of biomedical waste is not only a legal necessity but also a social responsibility.

Proper management of waste also helps to minimize the cost of Bio-waste Management within the both hospitals so it helps to maximize profitability and minimize wastage as well.

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