

Quantitative Characterization of Biomedical Waste Generated From Some Healthcare Units of Rewa City

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Abstract: Since majority of the persons receiving the treatment in the hospitals are suffering with infectious diseases therefore, the waste generated in the hospital has potential to transmit infections and other hazards to hospital staff and nearby community, if not managed properly. The study observed the lack of awareness related to infection and harm by biomedical waste in all the health care units surveyed except Sanjay Gandhi hospital Memorial hospital and VHRC hospital, where the handling of waste was found satisfactory. To save the mankind from adverse effects of healthcare waste, effective management of biomedical waste is not only a legal necessity but also a “social responsibility”.

Key Words: biomedical waste, health care units, management

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I. Introduction

The biomedical waste generated during diagnosis, treatment, and immunization processes in healthcare establishments includes wastes such as sharps, human tissue or body parts, and other infectious materials, and is often considered to be a subcategory of hospital waste (Baveja *et al.*, 2000; Gupta and Boojh, 2006). An important prerequisite and key to the meaningful waste management program is segregation. It should be done at source, in separate containers so that each category is treated in a suitable manner to render it harmless. Any carelessness in the management of wastes generated in a hospital will spread various kinds of infections. It may cause serious problems not only to the hospital staff but society at large.

It is of paramount importance that a number of key aspects of BMW are addressed. These include efficient segregation of different types of BMW, use of coded and coloured bags, and excellent handling and transfer. The exposure to infectious and hazardous hospital waste can cause serious health hazards to those who handle it, particularly to waste collectors or rag pickers and the environment (Silva *et al.*, 2005). If the infectious component of the waste gets mixed with the general non-infectious waste, the entire bulk of hospital waste potentially becomes infectious (Info Nugget, 2003). The biomedical wastes from health care units generated depend upon several factors viz., methods of waste management; health care unit occupancy; health care unit specialization; reusable items and their ratio in use; infrastructure and resources and their availability (Mandal and Dutta, 2009). To ensure that medical waste is handled and treated in most cost effective manner and with least health risk to employee and the community, hospital administrator must carry out a comprehensive appraisal of the activities associated with generation, handling and disposal processes (Studnicki, 1992).

The present study was conducted with the following objectives:

1. To know the existing practice of biomedical waste management in nine health care units of Rewa City.
2. To identify the various kinds of biomedical wastes generated in selected group of health care units.

II. Materials And Methods

In the present study total 09 hospitals were surveyed in Rewa City of M.P State to know the current status of Biomedical Waste Management practiced. The health care units studied were Government district hospital Rewa, Sanjay Gandhi Memorial Hospital Rewa, Agarwal Nursing Home Rewa, Churiya Hospital and Research Center Rewa, Adarash Hospital & Research center, Mithlesh Memorial Nursing Home, Jeewan Jyoti Hospital, VHRC Hospital and Shankar Nursing Home. The data was conducted with the help of interviews in the first stage and in the second stage existing practices of biomedical waste management were observed. For at least 3 months, interviews and statements were recorded from doctors, nurses, lab. technicians, waste handlers, and sweepers. Data was collected, then compiled and analysed manually.

III. Results And Discussion

Table 1: Details of no. of doctors with number of beds and no. of supporting staff in different group of health care units

Name of health care units	No. of Wards	No. of Beds	No. of Doctors	No. of the supporting staff members	Total
Agarwal Nursing home	02	20	03	17	20
District Hospital Rewa	10	100	39	72	111
Sanjay Gandhi Memorial Hospital	25	1200	350	512	862
Chirayo hospital & Research Cente	04	20	04	19	23
Adarash Hospital & Research center	03	20	02	05	07
Mithlesh Memorial Nursing Home	03	20	03	06	09
JeewanJyoti Hospital	02	20	04	07	11
VHRC Hospital	06	100	15	40	55
Shankar Nursing Home	03	30	04	08	12

Table2: List of average no. of outdoor and indoor patients visited per day in 09 health care units

Name of health care units	Outdoor patients/day	Indoor patients/day	Total
Agarwal Nursing home	28+	11+	39
District Hospital Rewa	230+	80+	310
Sanjay Gandhi Memorial Hospital	1340+	820+	2163
Chirayo hospital & Research Center	37+	15+	52
Adarash Hospital & Research center	15+	05+	20
Mithlesh Memorial Nursing Home	40+	15+	55
JeewanJyoti Hospital	15+	7+	22
VHRC Hospital	150+	40+	190
Shankar Nursing Home	45+	15+	60

Table3: Collection of Bio-Medical waste from the 09 health care units

Name of health care units	Yellow	Red	White	Blue	Total
Agarwal Nursing home	5 Kg	None	None	2 Kg	7 Kg
District Hospital Rewa	27 Kg	3 Kg	None	7 Kg	37 Kg
Sanjay Gandhi Memorial Hospital	113 Kg	22 Kg	7 Kg	18 Kg	160 Kg
Chirayo hospital & Research Center	7 Kg	None	None	2 Kg	9 Kg
Adarash Hospital & Research center	4 Kg	None	None	3 Kg	7 Kg
Mithlesh Memorial Nursing Home	5 Kg	None	None	1 Kg	6 Kg
JeewanJyoti Hospital	4 Kg	None	None	2 Kg	6 Kg
VHRC Hospital	6 Kg	3 Kg	100 g	2 Kg	11kg+100g
Shankar Nursing Home	4 Kg	None	None	2 Kg	6 Kg

Table4: Mode of management of health care waste adopted by health care units studied

Name Of Health Care Units	Segregation & Collection	Color Coded Bins	Disinfection /Sterilization	Transportation	Final Disposal Site
Agarwal Nursing home	Not done	Available	None	Indo Water Management Vehicle	Satna
District Hospital Rewa	Not done	Available	None	Indo Water Management Vehicle	Satna
Sanjay Gandhi Memorial Hospital	Done	Available	Yes	Dump in the hospital premises	Rewa
Chirayo hospital & Research Center	Done	Available (But don't follow color code)	None	Indo Water Management Vehicle	Satna
Adarash Hospital & Research center	Not done	Available (But don't follow color code)	None	Indo Water Management Vehicle	Satna
Mithlesh Memorial Nursing Home	Not done	Available (But don't follow color code)	None	Indo Water Management Vehicle	Satna
JeewanJyoti Hospital	Not done	Available (But don't follow color code)	None	Indo Water Management Vehicle	Satna
VHRC Hospital	Done	Available	Yes	Indo Water Management Vehicle	Satna
Shankar Nursing Home	Not done	Available (But don't follow color code)	None	Indo Water Management Vehicle	Satna

The present study was undertaken to assess the status of health care waste management in 09 health care units/ hospitals of Rewa City. It was found that General OPD services were available in all the Health Care Centers/Units Studied. In District Hospital Rewa and Sanjay Gandhi Memorial Hospital the general OPD and IPD services, specialty OPD and IPD services and Superspecialty OPD and IPD services were available. Both radiological and laboratory services were available in Sanjay Gandhi Memorial Hospital. The average OPD/day was 28+ in Agarwal Nursing home, 230+ in District Hospital Rewa,1340+ in Sanjay Gandhi Memorial

Hospital, 37+ in Chirayo hospital & Research Center, 15+ in Adarash Hospital & Research center, 40+ in Mithlesh Memorial Nursing Home, 15+ in JeewanJyoti Hospital, 150+ in VHRC Hospital, and 45+ in Shankar Nursing Home (table02). The average IPD/day was 11+ in Agarwal Nursing home, 80+ District Hospital Rewa, 820+ in Sanjay Gandhi Memorial Hospital, 15+ in Chirayo hospital & Research Center, 05+ in Adarash Hospital & Research center, 15+ in Mithlesh Memorial Nursing Home, 07+ in JeewanJyoti Hospital, 40+ in VHRC Hospital, and 15+ in Shankar Nursing Home. In all the health care units total no. of patients were 2911, total no. of Doctors were 424 and lastly total no. of staff members were 686+ (table 01). The total waste generated in all the health care units was 249Kg + 100g /day(table 03). The quantity of waste generated in kg/pt/month under different Categories both hazardous and non-hazardous of the various group of health care centers/units were observed to be 33% hazardous and 67% non-hazardous waste. Management of health care waste was not satisfactory in all the health care units studied, except Sanjay Gandhi Memorial Hospital and VHRC Hospital. In District Hospital Rewa, different colored bags/bins were found available but were used to store different types of wastes, segregation and disposal is known to them, but that is not applied practically, and it was found different types of wastes were stored in the same bins. In Agarwal Nursing home and JeewanJyoti hospital no waste segregation and collection was done. The waste was made to burn openly. In Adarash Hospital & Research center, Chirayohospital & Research Center although the colour coded bins were found available, but the colour coded bins were not used as per rules of the biomedical waste management 2016. No kind of sterilization was done in these hospitals. It was observed that in Sanjay Gandhi Memorial Hospital where BMW management was implemented as per BMW 2016 rules had process of segregation of waste at generation level into various colour coded bags and plastic drums, transportation of infectious waste to on site incinerator was found to be completely in place. In Sanjay Gandhi Memorial Hospital and VHRC Hospital, proper protection during the treatment of patient by doctors and the staff members and it was found that the handling of waste management was satisfactory, rather than other Health Care Units studied in which there was lack of awareness related to infection and harm by bio-medical waste, especially in Agarwal Nursing home and JeewanJyoti hospital. Apart from that latest equipment's were used in treating the biomedical wastes in VHRC and Sanjay Gandhi Memorial hospital.

IV. Conclusion

To conclude the present study had observed that the practice of health care waste management in Rewa district of Madhya Pradesh State was unsophisticated and inadequate because the waste generated was not stored in colour coded bins i.e. the waste separation/segregation and proper treatment of waste was not done as per norms of Biomedical Waste management and handling rules 2016, except at Sanjay Gandhi Memorial Hospital and VHRC Hospital, where sterilization, autoclaving, incineration was followed properly. In other health care institutions the hospital personnel were far behind in meeting the current needs and standards. The most imperative component of the waste plans is to develop a system and culture through education, training and persistent motivation of the health care staff.

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