East Asian Journal of Multidisciplinary Research (EAJMR)
Vol.2, No.10, 2023: 4331-4336

Biomedical Waste Management in Private Hospitals of Bangalore

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A R T I C L E I N F O

Keywords: Biomedical Waste, Diseases, Health Care Facility, Hospital Staff

Received : 11, August
Revised : 15, September
Accepted: 21, October

A B S T R A C T

Hospital waste is now predicted as a major public health hazard. According to World Health Organization, every year millions of people globally die due to infections such as HIV, Hepatitis B, and C and hepatocellular cancer transmitted through unsafe healthcare practices. There are also shocking disclosures about used medical devices and other items getting recycled by corrupted traders in countries. This happens when the hospitals do not take adequate steps to disinfect the medical waste as required under the law. The present study emphasis on evaluation of Biomedical waste management in Private Hospitals of Bangalore.

DOI prefix: https://doi.org/10.55927/eajmr.v2i10.4786
ISSN-E: 2828-1519
https://journal.formosapublisher.org/index.php/eajmr

INTRODUCTION

Despite the legal provision of Biomedical Waste Management exercise, Indian Hospitals has not achieved the desired standard even after more than ten years of enforcement of the law. Biomedical waste has become a serious health hazard in many states, including Karnataka. Careless and indiscriminate disposal of this waste by healthcare establishments and research institutions can contribute to the blowout of serious diseases such as hepatitis and AIDS (HIV) Biomedical waste is being indiscriminately discarded into municipal bins, dump sites, on roadsides and in water bodies in many countries. All this is leading to rapid proliferation and distribution of infectious, dangerous and fatal communicable diseases like hepatitis, AIDS and several types of cancers.

THEORETICAL REVIEW

Bio Medical Waste means any unused material and which are generated through the diagnosis, treatment or vaccination of human beings or research activities pertaining thereto or in testing of biological or in health camps. Bio-Medical waste includes all the waste generated from the health care units which can have any contrary effect to the health of a person or to the environment in general if not disposed properly. All such waste which can adversely harm the environment or health of a individual is considered as infectious and such waste has to be overcome as per BMWM Rules, 2016.

The quantity of such waste is around 15% to 20% of total waste generated from the Health Care Facility. This waste consists of the materials which have been in connection with the patient's blood, secretions, infected parts, biological liquids such as chemicals, medical supplies, and glassware, plastics etc. Bio Medical Waste Management Rules, 2016 categorises the bio-medical waste generated into four categories based on the segregation pathway

S. No.	Category	Type of waste	Colour & Type of Container
1.	Yellow Category	- Human Anatomical Waste - Animal Anatomical Waste - Soiled Waste - Discarded or Expired Medicine - Microbiology, Biotechnology and other clinical laboratory waste - Chemical Waste (yellow-e) - Chemical Liquid Waste	Yellow coloured non-chlorinated Plastic Bags  Note: (i) Chemical waste (yellow-e) comprising of un-used, residual or date expired liquid chemicals including spent hypo of X-Ray, should be stored in yellow container
2.	Red Category	Contaminated Waste (Recyclable)	Red Coloured Non Chlorinated Plastic Bags (having thickness equal to more than 50 µ) and Containers 
3.	White Category	Waste Sharps including metals	White Coloured translucent, puncture proof, leak proof, Temper Proof containers 
4.	Blue Category	• Glassware • Metallic Body Implants	Puncture proof, leak proof boxes or containers with blue coloured marking  

METHODOLOGY

The current study is based on survey method. It is a descriptive study which seeks to specify Knowledge and Attitude of Hospital staff about Bio-Waste Management in Public Hospitals, Bangalore. The non-probability convenience sampling procedures were mainly used to collect the data from 606 respondent. The questionnaire was tested for reliability using cronbach's alpha, and its value is 0.861(Cortina, 1993 and Cronbach,1951). Data was collected from both primary and secondary sources. Questionnaire method was used to collect the Primary Data. The secondary Data was collected through journals, periodicals, newspapers and books. The data is from the period March 2023 to June 2023.

RESULTS

Profile of Hospital Staff

Table 1 tries to capture the respondents sketch in term of gender, Age, Types of Hospital staff and Year of Experience

Table-1: Demographic Details of Respondent

Demographic details		**No of Respondent**	**Percentage**
Gender	Male	484	79.9
	Female	122	20.1
Age	under25	62	10.2
	25-35	108	17.8
	35-45	147	24.3
	45-55	149	24.6
	55+	140	23.1
Types of Hospital Staff	Doctor	102	16.8
	Ambulance staff	58	9.6
	Surgeon	49	8.1
	Pharmacist	75	12.4
	Nurse	322	53.1
Year of Experience	0-5 Years	175	28.9
	5-10 Years	257	42.4
	Above 10 years	174	28.7

Source: Primary Data

The respondents comprised of 484 male and 122 female age group under 25(10.2%),25-35 (17.8%), 35-45 (24.3%), 45-55 (24.6 %) and above 55 (23.1%). The respondents comprised of Doctors (16.8%), Ambulance staff (9.6%), Surgeon (8.1%) Pharmacist (12.4%) and Nurse constitute the highest with 53.1%. It is also observed that 42,4 % of respondent have experience 5 to 10 years.

Table 2 Respondent knowledge about Biomedical waste Management

Particulars	Minimum	Maximum	Mean	Std. Deviation
Knowledge about colour coding of bags in hospitals to dispose of waste sharp	1.00	5.00	3.1452	1.12465
Knowledge about colour coding of bags to dispose of drug ampules	1.00	5.00	**4.4587**	.72096
Knowledge about the treatment of BMW in yellow plastic bag	1.00	5.00	3.6221	.90951
Knowledge about the best disposal of cytotoxic drugs	1.00	5.00	4.1386	.84144

Source: Primary Data

Table 2 provides details on **knowledge about Biomedical waste Management** and descriptive statistics for each scale used in the study. The result indicates the mean score of all the constructs items is above 3.5 on the scale 1-5 with highest Standard deviation 1.12465 for construct Knowledge about colour coding of bags in hospitals to dispose of waste sharp.

Table 3 Attitude regarding Biomedical waste Management

Particulars	Minimum	Maximum	Mean	Std. Deviation
BMW increases the financial burden on hospital administration and is a waste of money	1.00	5.00	2.345	.78969
BMW is the responsibility of the government and not my responsibility	1.00	5.00	3.9785	1.08386
BMW reduces the incidence of hospital-acquired infection	1.00	5.00	4.1238	.87170
Segregation of waste is necessary before waste disposal	1.00	5.00	4.2508	.75829
Hand washing protocol after handling biomedical waste is applicable	1.00	5.00	4.0182	.82602
Safely discard all the needles you use are followed	1.00	5.00	**4.3234**	.73249
Regular frequently to throw off the general waste in bins for BMW is maintained	1.00	5.00	4.1584	.76363
Needle cutter is provided before disposing of used needles	1.00	5.00	4.1914	1.00396

Source: Primary Data

Table 3 reveals the mean and standard deviation among the constructs. The mean value of Safely discard all the needles you use are followed (4.3234) indicates good knowledge about Biomedical waste management system.

DISCUSSION

Based on the present study most of Hospital staff were observed to be good in theoretical knowledge as well as practices regarding Biomedical waste. Most of the respondent are aware that segregation of waste must be done at the point of waste generation. Moreover, healthcare workers are the key personnel responsible for medical waste management from generation until their final disposal. According to the results, a high percentage of the respondents used colour coding to identify and classify waste, indicating a high understanding of Biomedical waste management.

CONCLUSIONS AND RECOMMENDATIONS

Thus, the present study concludes even though most of respondent are aware of biomedical waste management, regular training of Hospital staff regarding Hospital waste management is an essential to reduce health hazards due to Biomedical waste. Health care Management has to regularly monitor to assess whether the norms are being followed. Brochures and posters should be pasted on walls in different wards, clinics, and labs about protocols of Biomedical waste management. State-level committees should be established which should regularly check Hospitals whether biomedical waste management protocol is followed.

FURTHER STUDY

Investigasi Kepatuhan dan Dampak Lingkungan dari Pengelolaan Limbah Biomedis di Rumah Sakit Swasta di Bangalore: Menilai Efektivitas Implementasi Pedoman dan Merumuskan Strategi Perbaikan

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