A STUDY OF BIOMEDICAL WASTE MANAGEMENT PRACTICE IN PUNJAB

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Abstract:

With increasing rate of patient healthcare activities in hospitals results in generation of abundant biomedical waste. It is a challenging task to properly manage such a huge health hazard waste by the management of the hospitals. In order to efficiently manage biomedical wastes, the government of India has framed biomedical waste management regulations which are applicable on every healthcare institution but making of law itself is not the resolution of any problem until practices in the health intuitions are not being carried out as per guidelines. It is necessary that every practitioner must be awaked about the regulations. Present research is exploratory in nature and discusses various issues associated with proper implementation of the biomedical waste management. A pilot survey was conducted at government medical college, Patiala. The investigation reveals that awareness about biomedical waste management and infrastructure are two integral aspects of successful and safe management of such huge health hazards waste.

Keywords: Biomedical waste management, health hazard waste, solid waste, BMW regulation.

1. INTRODUCTION

Biomedical waste management deals with handling and disposal procedure of waste generated during diagnosis and treatment of patients in the hospitals and laboratory. As the generated waste is a potential source of transmission of diseases and handling such infected waste requires appropriate planning and strategies. If it is not disposed in an efficient manner, the infected wastes may contain microorganisms that can infect the people who come in contact with the waste as well as the community at large. The government of Indian, Ministry of environment, forest and climate has published manual called Bio-medical waste management, Rules, 2016 to efficiently handle and dispose of biomedical waste. Every health institute is bound to follow biomedical waste management regulations, 2016. The various modifications have been incorporated into the new regulations. There

is need to ensure that all health institutions must follow new regulation and conduct the practice in more safely. The various significant studies found in the literature which not only provides in depth knowledge and understanding but also reveals the problems being faced in implementation of biomedical waste management in the hospitals. **Kishor J. et al.** (2000) have conducted study at teaching hospital in New Delhi, on the awareness about BMW and infection control among dentists. In similar study, **Muduli K et al.** (2012) identified major health care waste management challenges like lack of Segregation Practices, lack of proper operational strategy ,poor regulative measures, Lack of Green Procurement Policy, waste-picking and reusing . **Kumar R et al.** (2014) investigated to access the quality of BMW management in 1100-bedded hospital attached to a tertiary care public institute in North India. They conducted study on the basis of 29 parameters related to various functions of HCW.

Bhardwaj M et al. (2015) held a research study to find out the awareness and knowledge level of BMW among undergraduate medical students of Punjab. It was an observational descriptive study based on pre- designed and pre- tested questionnaire .The study was done on 110 second year professional medical students. It was concluded after research that 73.6% students were not known about the legislation of BMW. It was also revealed that majority of the students (71.8%) had deficit knowledge about categories of BMW and its disposal in color bags. Almost 47.2% students didn't have the knowledge about the handling and disposal procedure of BMW. **Hiremath RN (2016)** presented study to assess the level of Knowledge, Attitude, and Practices (KAP) about Biomedical Waste (BMW) management among 80 Health Care Workers (HCWs) at one of the Multispecialty Hospital in Eastern India. It was cross sectional descriptive study.

It is cleared that there were various studies which emphasized the most common problems which are appeared due to the absence of waste management, lack of awareness about their health hazards, insufficient financial and human resources for proper management and uncontrolled disposal of biomedical waste. In light of findings, the present study is being conducted in government hospitals of Punjab.

2. BIOMEDICAL WASTE MANAGEMENT PRACTICES

The Bio-Medical Waste Management Rules, 2016, defined biomedical waste as a waste generated during diagnosis, treatment or immunization of human beings or animals, or in research activities pertaining thereto, or in the production and testing of biological. It is defined that some part of the biomedical waste is potential source of infection transmission, especially hepatitis B and C, HIV, tetanus (lockjaw) etc. In order to efficiently manage BMW waste, it has been classified into various categories in BMW rule book 2016. Following is the brief description of the ten categories of biomedical waste.

Sr.No.	Type of waste	Description
1.	Infectious waste	Infectious wastes include sufficient quantity of pathogens (viruses,
		parasites, bacteria, or any fungi).
2.	Pathological	The Pathological waste includes body parts, tissues, human fetuses,
	waste	animal carcasses, blood, body fluids, organs, anatomical wastes
		(recognizable parts of human or animal body), all these are the parts
		of Pathological wastes.
3.	Sharps	Needles, knives, infusion sets, saws, broken glass, nails, scalpel and
		other blades hypodermic needles are those sharpening items which
		are used for cuts or puncture the wounds
4.	Pharmaceutical	Expired, unused, spilt, and contaminated pharmaceutical products,
	waste	drugs, vaccines etc are those pharmaceutical wastes which are no
		longer required to be disposed appropriately.
5.	Radioactive	The process which is accompanied by one or more types of
	waste	radiations such as α - Particles and β -Particles and Gamma-Rays.
		Radionuclides continuously undergo spontaneous disintegration
		(known as radioactive decay). Energy is liberated in this process
		generally resulting in the formation of new nuclides. These cause
		ionization of intracellular material; radioactive substances are
		therefore genotoxic.

Table1: Various types of source of biomedical waste

Every category needs specific handling procedure and treatment method for dispose off. There is need of proper segregation of waste according to categories specified in the rule book. But, there are some cases came into light where improper segregation of waste or dumping waste in open area causes various health issues and polluted the environment.

Biomedical waste management rules:

The Biomedical waste management rules, 2016 redefines the new definitions of biomedical waste, occupier, operator and prescribed authority.

Biomedical waste: "It is defined as waste generated during the diagnosis, treatment or immunization of human beings or animals or research activities pertaining thereto or in the production or testing of biological or in health camps" (BMW, rules 2016).

Occupier: "A person having administrative control or occupies premises of the health institution which is generating biomedical waste is termed as occupier. The health institution refers hospital, nursing home, clinic, dispensary, veterinary institution, animal house, pathological laboratory, blood bank, health care facility and clinical establishment" (BMW, rules 2016).

Prescribed authority: "The State Pollution Control Board in respect of a State and Pollution, Control Committee in respect of a Union territory", (BMW, rules 2016).

The Biomedical Waste Management Rules, 2016 are divided into schedules, rules and forms as follows:

Schedules: There are four schedules that describe waste categories, labels schemes, standards of dispose, prescribes duties (BMW, rules 2016).

Sr. No.	Schedule No	Description
1	Schedule 1	The schedule defines waste categories/ type of bag/ container used/ type
		of waste treatment /disposal options.
2	Schedule 2	The schedule defines standards for treatment and disposal of bio-
		medical wastes.
3	Schedule 3	The schedule provides list of prescribed authorities and the
		corresponding duties.
4	Schedule 4	The schedule provides label list for bio-medical waste containers or
		bags and label for transporting bio-medical waste bags or containers

 Table1: Various schedules in Biomedical waste regulation

Forms: It provides the performa of various forms that can be used for filling application, complaint, and annual report (BMW, rules 2016). Following is the list of various forms.

Sr. No.	Form Name	Detail
1.	Form – I	Deals with accident reporting)
2.	Form - II	Application for authorization or renewal of authorization
3.	Form –III	Deals with Authorization
4.	Form – IV	Provides format performa for Annual Report
5.	Form –V	Application for filing appeal against order passed by the prescribed authority

The various rules and recommendations related to collection, segregation, transport and disposal are defined in detail. Every health institution, hospital dispensary are bound to follow the biomedical practices as per the rules and recommendations cited in the Biomedical Waste Management Rules, 2016.

3. HEALTH HAZARDS IN HANDLE OF BMW

The major problems raised by improper biomedical waste are due to lack of segregation practices, results in mixing of hospital wastes with general waste making the whole waste stream hazardous (Lakshmi BS et al.,2012)..

Inappropriate segregation: Inappropriate segregation ultimately results in an incorrect method of waste disposal. Such wrong practices results in environmental pollution, unpleasant smell, growth and multiplication of vectors like insects, rodents and worms and may lead to the transmission of diseases like typhoid, cholera, hepatitis and AIDS through injuries from syringes and needles contaminated with human.

Spread of communicable diseases: Communicable diseases spread through water, sweat, blood, body fluids and contaminated organs are important to be prevented.

Infection to animals: The Biomedical waste scattered in and around the hospitals invites flies, insects, rodents, cats and dogs that are responsible for the spread of communication disease like plague and rabies. Rag pickers in the hospital, sorting out the garbage are at a risk of getting tetanus, Hepatitis B, C and HIV infections.

Recycling of medical items: There are few items that are more frequently misused and illegally recycled into the market. Disposable syringes, needles, IV sets and other article like glass bottles without proper sterilization are responsible for Hepatitis, HIV, and other viral diseases.

4. PILOT STUDY

A pilot study was conducted at Government Rajindra Hospital Patiala. It is multi-specialty hospital at the heart of the city. A questionnaire was derived to access the awareness level of the nursing staff and questions were raised in the light of current, BMW regulation 2016. Total 50 questionnaires were distributed where only 35 were received back. It was revealed from the survey that majority of nursing staff found well aware about the health hazards involved in handling of BMW. The researcher was also physically observed the hospital activities and noticed that color coding of bins and collection procedure of waste from various wards were as per rules. Nurses are also following all the precautions and instructions while handling bio-medical waste. Furthermore, the study reveals that patients and attendants were not aware about the BMW and some time contaminate the waste. Some of the respondents demand periodic seminars and proper equipments. There is lack of sufficient equipments in the hospitals at ground level. There is no in house treatment procedure of biomedical waste. The study also revealed that fourth class employee need to be well aware about the procedure.

5. CONCLUSION

Biomedical waste management has emerged as great challenge for the healthcare authorities. It is not only threat to human but can also pollute environment. Government has taken initiative in the form of BMW rules book 2016 which has covered all most all the aspect related to handling and dispose of health hazard waste. The present study has explored about the BMW regulations and various health hazards in handling of biomedical waste. A pilot study also revealed that there is need to provide awareness about the handling procedure and there must be proper equipments to handle and dispose of the waste.

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