

A STUDY OF MEDICAL WASTE" MANAGEMENT IN DARBHANGA" DISTRICTS

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ABSTRACT

The biomedical waste generated from hospitals and other health care Establishments are of infection in hazardous nature so required to be put in a special category. Lack of awareness among the health care Professionals, technical knowhow and poor waste management infrastructure of hospitals make the situation worse here in the Darbhanga districts. To protect human health and the environment. The Ministry of Environment and Forest Government of Bihar, notified the Biomedical waste management and handling rule-1998, applicable of all persons who generate, collect, recycle, store .transport, treat, dispose, or handle biomedical waste. In the purview of the latest notification a primary study was conducted in 18 HCEs of Darbhanga to estimate the quantity of waste being generated and to evaluate some existing practices being employed by the HCEs for the management of biomedical waste. Questionnaire-based interviews, visuals, inspection, hospitals and random weighing the quantity of medical waste were adopted as a method to carry out the study. The study revealed HCS of Darbhanda generate 0.8kg/bed/day with a total of 2530kg of biomedical waste per day 65% of the surveyed HCS dispose of their waste in unscientific and not under the newly laid notification segregation of BMW at the point of generation is at a rudimentary stage. The study concludes an implementation deficit of guidelines on medical waste.

Keyword- Medical waste; Waste Management, Bio-medical.

1.INTRODUCTION;-

Biomedical waste has become a various health hazard in many countries. careless and environment disposal and waste by the hospital can Contribute to speared of serious diseases proper handling, treatment and disposal of biomedical waste all important elements of healthcare. medical care is vital for our life and health, but the waste generated from medical activities regenerate a real problem for human beings. in proper waste generated in health care facilities causes a direct health impact on the community and environment.

Biomedical waste (BMW) means any waste, which is generated during diagnosis, treatment, or immunization of human beings or animals, or in research activities pertaining thereto or in the production or testing of any preparations made from organisms or microorganisms of products of metabolism and biochemical reaction.

The issue of bio-medical waste management has come up as a matter of grave concern in developing countries like India.

Biomedical waste speared are different part of Darbhanga generated by hospital is use sanitary pad, gloves, blood bag, catheters, cotton swabs ,syringes, needles ,etc. of pic near D.M.C.H area (see figure-1)



Figure-1 Waste dumping ground inside Darbhanga medical hospital pic;-capture(10.01,2017)

2 .OBJECTIVE ;

The objectives of this study were.

- 1 to areas the waste handling and treatment system. Of Biomedical solid waste or hospitalize.
- 2 to gravitative estimate the amount of non-infectious and infection waste generated in different Hospitals
- 3 To study the final disposal ways by incineration under the environment problem act (mgt4 Handling) rule 1998.
- 4 To assess the left of awareness about the various aspect of bio-medical waste and disposal practices

3.THE STUDY AREA

The study was conducted in Darbhanga an important district and one of the Commissioner headquarters of north Bihar is located at 26°.17' north latitude and 85°.9' East longitude. The District is surrounded by Madhubani in north Samastipur in south, Muzzafarpur in west and saharasupul in East. The district lies in a semi-tropical climate zone. The state capital Patna is only 130 k.m away and is linked with the famous Mahatma Gandhi Setu. The district is spread over 2279 sq K.M. The medical facilities able to hear is not so good. All together 152 medical facility centers located in these districts. the darbhanga medical college Hospital is the second medical hub in the state, and is the most reputed MBBS college in the city. Medical care is vital for human life but it becomes a threat to that very life when the healthcare institutions become a source of transmitting diseases.

TABLE I PUBLIC HEALTHCARE INFRASTRUCTURE IN THE DISTRICT

SN.	TYPE OF INSTITUTIONS	NUMBER	NO.OF BED
1	Darbhanga medical college & hospital	1	1 000
2	District hospital	0	00
3	Referral hospital	2	60
4	Block PHCs	18	108
5	APCs	41	70
6	Small private hospital(6-15Bed)	62	36
7	Large private hospital (25-80 Bed)	12	165
8	Other small	16 8 total	12

Sources; Health action plan, Darbhanga Bihar Total-152

4.METHODOLOGY OF THE STUDY;

The study is based on secondary and primary sources A cross-sectional study was a be conducted using, questionnaires with close-ended questions .questionnaire was distributed to most of the health centers and was used to access their knowledge of Biomedical waste disposal.

5. OBSERVATION OF HOSPITAL;

Initial observation of the premises and vicinity was focused on gathering the hand information about the waste generation and disposal facility of the hospitals . while observations, estimations of the weight of BMW generated by the particular hospital were made based on the capacity of the storage/collection bins, their numbers and emptying frequencies, as most of the hospitals do not keep formal records on the quantity of waste generation, several face-to-face formal and informal approaches were adopted in order gather data. Discussions were made with nursing staff, waste collectors and support staff on general hospital waste management practices and their basic understanding of the waste management issue. The actual scenario on the quantity of waste generated and waste management process was explained by waste collectors based on their experiences.

6.QUESTIONNAIRE SURVEY:

A questionnaire survey was designed to collect the information from occupiers of all the 152 HCEs.The gathered responses were recorded to obtain knowledge on BMW generation, segregation disposal and management strategies within each surveyed hospital. The questionnaire mainly addressed the following summarized issues;

The resulting answer was graded and the percentage of correct and incorrect answers to each question from all the participants was obtained.

1. Total number of bed and occupancy rate
2. Total amount of BMW generated per day
3. Type of BMW generated
4. What type of container or bag is used for the collection of waste
5. Segregation of BMW
6. Waste treatment and disposal practices just throwing the waste the Premises, sending To the municipal bins etc

7. Awareness regarding legislation related to biomedical waste management formulation By the government of Bihar & India

Different types of containers were being used for collection/ intermediate storage of a variety of waste in surveyed HCEs. The weight of this containing were randomly measured in kilograms by spring balance to verify the data on waste generation gathered by interview and questionnaire methods. The rag pickers were also cross-questioned to obtain knowledge of the type of waste encountered by them, the problem of collection of waste and sale of plastics and recyclables. The result obtained on the quantity of waste generated by surveyed HCEs was analyzed by taking a statistical average. The collected data on waste management practices were analyzed to address the present scenario of waste management practices in the city.

7. WASTE GENERATION :

The quantity of waste generation depends on various factors including the number of beds, type of health care facility, occupancy rate and socio-economic condition of the patients. Darbhanga even receives patients from not only the nearby places but from all over the northern region adjoined district of Nepal. The urban population in cities is compounded due to the ever-increasing rural to urban migration in search of jobs and opportunities. Medical facilities continue to be poor in rural areas, necessitating patients to move to urban or semi-urban localities for better medical care. Thus, there has been a mushrooming of small and medium-sized private medical facilities (nursing homes) in cities and towns. So, the occupancy rate throughout the year remains very high (85-95%) contributing to the generation of BMW. During the survey of hospital premises, it was witnessed that HCE generates needles, sharps, syringes, blood-soaked cotton swabs, sanitary pads, used catheters, blood bags, gloves, stained clothes and liners, discarded medicines, papers, bottles (glass and plastic), pathological waste, etc. including the general and kitchen waste. The exact data on types of waste generated was not available with the HCEs as none of the surveyed hospitals were practicing record-keeping on types of waste generated.

*All types of waste are collected in common bins place outside the patient wards.

*The hospitals mostly have no any treatment facility for infection waste.

*The Laboratory waste material, which is disposed directly into the municipal sewer, without proper disinfection of pathogens.

*All disposable plastic items are segregated by the rag pickers from the hospitals.

*The open dumping of waste is common sense.

The record-keeping and preparation of inventory on BMW were nonexistent because of a lack of awareness on waste management and existing regulations. Collectively the surveyed HCEs generate a total of 4215 Kg of waste per day. The average amount of BMW generated by the surveyed HCEs was 1.2 Kg/bed/day with a minimum (1.02 Kg/bed/day) in a military hospital to maximum (1.39Kg/bed/day) small private hospitals. In the case of government hospitals it was calculated below 1.0 Kg per bed per day. The quantity of healthcare waste generated is a matter of great concern, and HCFs must learn to minimize regulated or infectious waste. Containment and segregation of potentially infectious material at the point of generation is reported to reduce the quantity of waste requiring treatment, and consequently the cost of waste management.

8.WASTE COLLECTION AND SEGREGATION:

In all the HCEs collection at source is in practice. A mixed type of container was being used for the collection of BMW at the place of generation. At most of the HCEs (58%) plastic containers were in use for the collection of waste (table 2).

Type of containers	% of HCEs
Plastic containers	58.5%
Metallic containers	15.5%
Cardboard and metallic containers	2.3%
Plastic and metallic containers	12.6%
Card board metallic and plastic containers	2.1%
No specific containers	1.4%

(Source; by the Researcher)

Segregation of biomedical waste is the most important function in waste management practice. Segregation practice leads to safe handling and disposal of BMW. The wastes should be identified; inventoried and special attention must be given to a small quantity of waste that is infectious and/or hazardous. Improper or no segregation leads to an increase in weight and volume of infectious waste. The segregation of BMW in surveyed HCEs was not observed in practice. Only two of the HCEs (4.76%) were practicing a color-coding system for segregation of waste. The authorities informed that the practice of segregation was in the

evolutionary phase and were not complying with the guidelines of Government [Biomedical waste (Management and Handling) Rules, 1998].

9. WASTE TREATMENT AND DISPOSAL:

Treatment of infectious waste (especially waste sharp, catheters, gloves and other disposable surgical instruments) shall be given disinfection treatment before final disposal. 38% of the surveyed HCEs perform treatment of such waste before disposal. The plastic / rubber / sharps were being disinfected by hypochlorite solution (0.1 % - 0.5 %). Liquid waste, body fluids or urine were directly drained in sewerage systems or soak pits. If infectious, disinfection with 10% formalin or 0.5% hypochlorite solution is recommended before disposal. It has been reported that efficient steam sterilization and safe disposal, as well as BMW management practices conforming to the legal provisions, contribute to the protection of both human health and the environment. A variety of practices were being followed by HCEs for medical waste disposal including throwing the waste on roads and campus, open burning of waste, ground burial, using municipal bins or burning in incinerators. The waste should be handled through a suitable pathway, which includes its generation, segregation, storage, collection, transportation, treatment and final disposal. The wastes having resale value i.e. needles, syringes and saline bottles are sold to waste handlers (rag man) either by hospital authority or by lower grade staff. Almost 90% of the hospitals under the study do not follow the guidelines for the disposal of BMW (1). However rudimentary arrangements of open burning and ground burial were being practiced by several hospitals. Few of them (9.5%) dispose of their waste by incineration and disposing of the ash in municipal bins. Disposing waste in or outside the premises attracts to earn their livelihood. Several hospitals also give some discarded material to the waste dealers (Rag piker) along with the mentioned disposal practices (table 3). Discard material includes cardboard boxes, empty bottles, disposable items, etc. Waste management department, allocation of budget and responsibility to staff for proper and scientific management of BMW is a prerequisite. Lack of awareness among the health care professionals and the absence of adequate guidelines resulted in poor management of BMW.

TABLE 3. Biomedical waste disposal pattern in the city of Darbhanga.

BMW disposal	% HCEs
Disposal of waste just outside the campus	47.6
Disposal of waste in Municipal bins	15.2
Incineration and ash disposal in municipal bins	9.5
Ground burial	13.8
Open burning and ground burial	11.5

10.SUGGESTION:

There was no effective waste segregation, collection, transportation and disposal system at most of the hospital .there is an immediate and urgent need to trend the educate all concerned persons to adopt effective medical waste management practices. To record the awareness level regarding the management of BMW, Opinion, and suggestion of occupiers were collected through a questionnaire survey. 19% of the respondent occupiers were aware of the Biomedical Waste (Management and Handling) Rules, 1998; however 81 % expressed their ignorance. On the issue of the practicability of biomedical waste management 83% were positive and while 17% had apprehensions due to lack of staff, funds and technology for waste management. On the issue of availing common incinerators in the future on reasonable minimum charges the hospital authorities were sharply divided, about 47.8% were positive to take the facility, while 42.8% did not agree to pay. 9.52% of the respondents were not able to decide their views.

11.CONCLUSION:

The study on the status of biomedical waste management practices in Darbhanga has highlighted the issues and practices of management of BMW. The present practices of management and disposal of biomedical waste are at the rudimentary stage. Occupiers of the HCEs and other responsible staff were lacking awareness, the dearth of funds and its proper allocation were also a major reason behind unsatisfactory waste management. The Darbhanga pollution control board shall take initiatives for enforcement rules (biomedical waste management and handling rules, 1998) and capacity building of the occupiers, doctors and medical practitioners. The HCEs shall be encouraged to focus on reduce, recover and disposal principles. It is very important to carry out the segregation of waste at the source before its treatment and disposal to restrict the potential infections, volume reduction and reduction in the cost of disposal of biomedical waste. Standards of segregation at the source, treatment of disposables, needle cutting, etc. can be achieved through periodic trainings of sanitary and health care workers. The study concludes that biomedical waste shall be given special attention by the policymakers, implementers, waste generators and handlers. The management practices can be further improved by the establishment of common waste management facilities, better

technology and equipment, capacity building and commitment of top management of HCEs. The result of the study demonstrate the need for strict enforcement of legal provisions and a batter environment system for the disposal of biomedical waste

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