ORIGINAL RESEARCH PAPER

Community Medicine

ASSESSMENT OF BIOMEDICAL WASTE MANAGEMENT AT GOVERNMENT CHEST DISEASE HOSPITAL, SRINAGAR: A CROSS-SECTIONAL STUDY.

KEY WORDS: Awareness, Biomedical waste, Infectious waste, Color coded bins.

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ABSTRACT

The study aimed to assess the compliance to latest waste management rules and regulations, the awareness among hospital personnel regarding bio-medical waste management, safety practices adopted by the health care personnel and to estimate the quantum of waste generated on daily basis. It was a descriptive cross-sectional study. Study material consisted of pre-designed semi-structured questionnaire and WHO rapid assessment tool. Observation of every section, record review and interview of Medical superintendent and randomly selected staff was done. The quantum of infectious waste generation was found to be 2kg /day Segregation was done in four colour coded bins.They use to pick up the waste manually on daily basis. The staff handling BMW uses only gloves as protective equipment. Specific color coding bucket (Black, Blue, Red and Yellow) for BMW waste management was available .The waste is collected from site of generation on daily basis . The final disposal is done by (Common Biomedical Waste treatment facility) daily. Lack of budget and logistics was an hindrance in the implementation of waste management. Majority of the respondent had awareness regarding disposal of BMW and infections spread by BMW mishandling.

Introduction:
Biomedical waste is waste generated during diagnosis, treatment or immunization of human beings or animals or research pertaining thereto, or in the production of testing and biological and is contaminated with body fluids.[1] WHO stated that 85% of hospital wastes are actually non-hazardous, around 10% are infectious and around 5% are non-infectious and categorised as hazardous wastes.[2]

In today's world,quality of health care has become a matter of concern.Public health care settings witness a significant amount of waste generation because of increasing demand for health care coupled with ever increasing patient load at these hospitals.These wastes,especially the infectious one if not managed properly and disposed off scientifically poses not only health hazard but is a threat to the environment and community as a whole.So a need was felt to assess the waste management system at government chest disease hospital, Srinagar.

Primary Objective: To assess the compliance to latest waste management guidelines.

Secondary Objective:
1) Assess the awareness in hospital personnel regarding bio-medical waste management.
2) Safety practices adopted by the health care personnel involved in Bio-Medical Waste handling .
3) To estimate the quantum of waste generated on daily basis.

Material and Method: It was a descriptive cross-sectional study. Approval was obtained from Principal Government Medical College, Srinagar. Chest disease hospital is an associated hospital of Government College, Srinagar. It is one of the oldest chest care institutes of Kashmir and has bed strength of .

A team of doctors from department of community medicine visited the Chest Disease Hospital on 23/ 02/ 2018.Pre designed semi structured questionnaire and WHO rapid assessment tool was used for data collection. Interview of Medical superintendent and incharge biomedical waste was done regarding the existence of waste management policy,Authorization from CPCB and tie up with common waste treatment facility. 14 health care personnel was randomly selected to assess awareness and practices regarding waste management starting from waste generation to final disposal. In addition, Record review and observation of every section was done.Quantum of waste generated was also estimated by interview and record review.Data was analysed by IBM Statistics 23 and results expressed in percentage.

Results and Discussion: Table 1 depicts the amount of waste generated on daily basis. Approximately , 25 kg of infectious waste are generated everyday.Data was missing for some categories of waste.Non hazardous waste constitute 60 kg which is less in comparison to the findings by Pandit NA et al [3]at Sher-i-kashmir Institute of medical sciences, Srinagar where solid waste generated was found to be 2.02 kgs/bed/day.

Table 1: Quantum of BMW generated in the hospital.

Type of Waste	Quantum (kgs/day)
Non-hazardous waste	60
Sharps	20
Infectious (non-sharp)	25
Anatomical waste	1
Pharmaceutical waste	Data not available
Chemicals	Data not available
Radioactive waste	Not produced
Municipal solid waste	Data not available

Needle and hub-cutter was in use and treated with 10% Sodium hypochlorite solution and finally disposed off into sharp pit. For solid BMW disinfection, 10% sodium hypochlorite solution is used.

BMW: SEGREGATION AND HANDLING: Segregation was done in four colour coded bins. They pick up the waste manually on daily basis. The staff handling BMW uses only gloves as protective equipment.As per the findings of Shalini Sharma et al,[4] out of total 54 waste handlers, Agra, 17 (31.48%) reported that only gloves are available as personal protective clothing during waste handling while, the remaining 37 (68.52%) stated that they did not use any type of personal protective clothing (PPC).

BMW STORAGE CONTAINERS: Specific color coding bucket (Black, Blue, Red and Yellow) for BMW waste management was available in the hospital as per the guidelines. Blue colored container is used for sharps in the hospital. Study in Lahore by Mahmood et al [5] showed that segregation and colour coding of biomedical waste were 100%.The hospital has a designated isolated area for BMW storage which is only accessible to authorized persons.The waste is stored for 24hrs.

BMW:COLLECTION AND ON-SITE TRANSPORT: The waste is collected from site of generation on daily basis by authorized staff and transported manually to storage site located within the hospital from where it is finally disposed off.

BMW:OFF-SITE TRANSPORT: The final disposal is done by M/S Kashmir Health Care Services Pvt Ltd. (Common Biomedical Waste treatment facility) located at Lassipora, District Pulwama daily. In a study by Patan S et al,[6] Offsite transport of the hospital waste is undertaken by a waste management company and waste is transported daily.

BMW:RULES AND REGULATIONS:IEC material and Biohazard symbol was displayed in most of the section at the point of generation. Body fluid, blood and mercury spill management was displayed at few places. However, no kit was available.

POLICY AND BUDGET: Lack of budget and logistics was an hindrance in the implementation of waste management.BMW management committee exist at the facility. But, it was not constituted as per the guidelines. The committee Conduct meeting on informal basis occasionally. According to WHO to be effective, a Health Care Waste Management (HCWM) policy has to be applied carefully, consistently and universally.[7]

SANITATION AND WASTE WATER. All patients have access to toilets within the hospital premises. Waste water is connected to septic tanks. There was a designated person for maintenance of sanitation.

Table 2: General Awareness Regarding Biomedical Waste

Parameters	Doctors (n=7)	Para-medics(n=7)	Total (n=14)
Awareness about 2016 BMW guidelines			
Present	4	3	7
Absent	3	4	7
Awareness about types of waste generated in the hospital			
Present	7	7	14
Absent	0	0	0
Awareness about type of colour -coded bins for segregation (as per 2016 guidelines)			
Present	4	1	5
Absent	3	6	9
Awareness about management and disposal of sharps			
Present	2	1	3
Absent	5	6	11
Awareness about personnel responsible for segregation of BMW			
Present	4	3	7
Absent	3	4	7
Awareness about disposal of BM waste in hospital premises			
Present	7	7	14
Absent	0	0	0
Awareness about final disposal of BM waste			
Present	4	4	8
Absent	3	3	6
Awareness about infections transmitted by BMW mis management			
Present	7	7	14
Absent	0	0	0
Awareness about management of spills (body fluid/blood/mercury)			
Present	0	0	0
Absent	7	7	14

Majority of the respondent had awareness regarding disposal of BMW and infections spread by BMW mishandling.In contrast findings by Shashwati Nima et al [8] reveal that doctors have significantly better knowledge than auxiliary staff about measures to be taken following accidental exposure to infected blood, body fluids or sharps (p=0.007).

The staff had not received any training on BMW management. As per the results of Kokila Selvaraj et al,[9] 90% of practitioners have not undergone any type of training regarding waste management.

There was neither any system of accidental reporting nor any provision for vaccination against infectious diseases.

Conclusion and Recommendation:

The study was an attempt to assess the adherence to waste management guidelines. Inadequate management of biomedical waste can be associated with risks to healthcare workers, patients, communities and their environment .The premier hospital is severely lacking in actions to dispose of its waste and uphold its statutory responsibilities as per the BMW rules and regulations 2016. The reason may be due to the lack of training to health care personnel and paucity of the funds for proper waste management .There is need for strict enforcement of legal provisions. A better environmental management system for the disposal of biomedical waste at the final waste treatment facility is emphasized which was reported to be unsatisfactory as per the statement of Medical Superintendent. A policy needs to be formulated to 'reduce, recover, reuse and dispose' the waste.

All the stakeholder involved in waste management should go beyond data compilation with strict enforcement of rules and regulations and acquisition of state of the art equipment for smooth functioning . It should be supported through imparting training on need basis, provision of personal protective clothing, vaccination and team work of all the staff involved in waste management. Emphasis should be given for supervision, monitoring, record keeping and reporting .Constitution of waste management team and committee and Hospital infection control committee is needed for overall implementation of waste management.

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