



BIOMEDICAL WASTE MANAGEMENT AT ORTHOPEDIC HOSPITAL OF NORTH INDIA

Sheema Samreen*, Inaamul Haq., Ghulam Hassan Khatana., Salim Khan S.M.,
Abdul Rouf and Khalid Bashir

Department of Community Medicine (SPM), Government Medical College Srinagar. Jammu and Kashmir, India

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ABSTRACT

Objective: The study was undertaken to know about overall biomedical waste management at lone orthopedic hospital in terms of knowledge among the health care staff and management at administration.

Methods: This descriptive cross-sectional study was undertaken in lone orthopedic hospital. 25 health care staff was chosen randomly to assess knowledge and hospital administrator was interviewed in addition to observing the staff practices for management assessment.

Results: The health care staff had poor knowledge about the overall biomedical waste management and practices were not at par. At administrative level records, logistic support and budget was not present.

Conclusion: The lack of knowledge among staff as well as seriousness of the administration regarding biomedical waste management is a great threat to staff as it to community. Regular training of staff with supportive supervision along with proper record maintenance and logistic staff ought to be done.

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INTRODUCTION

Health care settings produce a large amount of waste called biomedical waste while delivering the services (Soliman & Ahmed, 2007). By definition "bio-medical waste" means any waste, which is 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, including the categories mentioned in Schedule I appended to these rules (The Gazette of India, Extraordinary, part ii, 2016).

Biomedical waste (BMW) is of great importance as it has potential to cause community acquired infections like HIV, Hepatitis B and hepatitis C and others if not handled and disposed in a hygienic and proper way (M. Kumar et al, 2015). So management of biomedical waste is an important and integral part of infection control of hospital (Soliman & Ahmed, 2007).

The importance of Bio-Medical waste management has been recognized by the governments across the globe and legislative measures have been enacted for mandatory management of waste properly (R. Kumar et al, 2014). Similarly in India Bio-Medical Waste (Management and Handling) Rules, 1998, Bio Medical Waste Rules, 2016 and Bio Medical Waste

Rules (Amendment), 2018 have been enacted (The Gazette of India, Extraordinary, part ii, 2016) (The Gazette of India, Extraordinary, 2018) (The Gazette of India, Extraordinary, Part II-Section (3), 1998).

However the BMW management is facing a lot of problems such as the absence of proper waste management, lack of awareness about the health hazards from BMWs, insufficient financial and human resources, and poor control of waste disposal are the most critical problems faced with healthcare waste (Das & Biswas, 2016).

With view of importance of biomedical waste management, this study was undertaken in lone orthopedic hospital.

METHODOLOGY

A cross-sectional study was done to assess the biomedical waste management at lone tertiary orthopedic hospital of Kashmir valley in the month of January 2018 after seeking permission from the Institution head. The assessment of biomedical waste management included use of two questionnaires - one was a pretested, pre-structured questionnaire for assessing knowledge about biomedical waste among different health care staff and second one was a questionnaire prepared from questionnaire for rapid appraisal of biomedical waste management given by World Health Organization (WHO) (United Nations Environment Programme / SBC World Health Organization National Health-Care Waste Management Plan • Guidance Manual • Annexe 6, n.d.).

*Corresponding author: Sheema Samreen

Department of Community Medicine (SPM), Government Medical College Srinagar. Jammu and Kashmir, India

For assessing the knowledge 25 personnel from health care staff were selected randomly and enrolled in the study after obtaining verbal consent. These health care personnel were then interviewed and observations were recorded. Furthermore data regarding the overall biomedical waste management was collected by interviewing the administrator of the hospital and observing the practices of biomedical waste management (such as segregation ,disposal and transport) in every section of hospital such as outpatient department, indoor wards ,emergency room, nurses station, laboratory , blood bank and operation theatre.

The observations about knowledge were summarized in the form of proportions and rest of observations were noted down and summarized.

RESULTS AND OBSERVATIONS

General Information about Hospital

Valleys lone tertiary orthopedic hospital has a capacity of 190 beds. On an average the 350 patients come each day.

BMW Generation

No information about the quantity of any type biomedical waste generated at the hospital was available.

BMW Segregation and Handling

The hospital segregated the waste into four color coded waste bins namely yellow, red, blue and black which implied newer 2016 guidelines were not implemented yet in hospital.

Auto-disabled and disposable syringes were used in the hospital. Approx. 590 injections were given per day No needle stick injury had been reported in last 12 months. Hub cutters and electric needle destroyer were used for cutting needles

The waste handlers only wore gloves as personal protective equipment & no other equipment was available to them for personal protection.

BMW Storage, collection and transport

The infectious waste was stored in plastic bags of blue, red, black and yellow color but segregation was not done as per guidelines. There was mixing of waste in dustbins.

Sharps were stored in blue bags/containers.

The hospital had a specific isolated area for BMW storage which was only accessible to authorized persons. All generated waste was stored in every morning and then waste was transported to the specific biomedical waste dumping shed located within the hospital premises which was only accessible to authorized persons and final disposal was outsourced to M/s Kashmir Health Care Services Pvt Ltd. [Common Biomedical Waste treatment facility located at Lassipora, District Pulwama].

The waste was collected by uncovered Lorries of the outsourced agency at morning time every alternate day.

Staff training regarding BMW management

No training had been provided for proper biomedical waste management to staff.

No facility for vaccination of staff against tetanus was available although hepatitis B vaccination was available at hospital.

BMW Regulations and Budget

BMW regulations written instructions were displayed in hospital. There was no budget head for BMW. Hospital had no official BMW Management Committee and team and infection control team.

Table 1 Knowledge of health care staff regarding biomedical waste

Knowledge about:	Total (Percent)
Existing Biomedical Waste guidelines in India(1998)	7(28%)
Biomedical Waste guidelines in hospital	13(52%)
Number of bins used to collect waste(1998 guidelines)	13(52%)
Disposal of general waste	9(36%)
Disposal of sharps	10(40%)
Disposal of anatomical waste	5(20%)
Disposal of soiled waste	11(44%)
Disposal of plastic waste	10(40%)
Diseases transmitted by biomedical waste	19 (86%)
Management of blood-spills	2(8%)
Management of mercury spills	0

A total of 25 health care personnel were interviewed to assess knowledge about biomedical waste and included 5 doctors ,5 pharamacists,5 lab technicians,4 staff nurses,1 matron and 5 sweepers. It was found that health care personnel had very poor knowledge about overall biomedical waste management.

DISCUSSION

Biomedical waste is threat to hospital staff as well as to common man if not handled as per recommendations .The study revealed that no record about the quantity of waste was available at hospital. The findings are in contradiction to findings of Yangchen and Pandit where quantity of waste generated was recorded (Dolma *et al*, 2018) (NA *et al*, 2007).

There is lack of training among the staff which can be the reason for their poor knowledge regarding biomedical waste management. Similar finding were reported by Ambrine *et al* in which staff had not received any training and had poor knowledge(Ashraf *et al*, 2018).

The staff wore only gloves as protective equipment due to unavailability of other personal protective equipment in hospital. Similar findings were reported by Yangchen *et al* (Dolma *et al*, 2018). However Shalini *et al* reported that only 50% of workers wore gloves but not due to non-availability but because of lack of awareness(Srivastav *et al*, 2012).

Furthermore, no budget is allotted for biomedical waste management which is similar to findings in a study done in Egypt (Soliman & Ahmed, 2007).

CONCLUSION & RECOMMENDATIONS

At management level the biomedical waste management in the hospital is not satisfactory. There are many shortcomings on part of administration such, as lack of record keeping about quantity biomedical waste lack of training among the staff and even non-availability of personal protective equipment. This

creates a disinterest among staff. Following recommendations should be followed

1. Proper record keeping should be maintained
2. Regular training of staff about new guidelines with timely supervision
3. Strict enforcement of biomedical waste rules/guidelines.
4. Allocation of some budget for management of biomedical waste in order to procure material for proper waste disposal.

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