

Original Research Article

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Study on the Awareness and Practice among Health Care Workers on BMWM in a Teaching Hospital in Nellore, A.P. India

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ABSTRACT

Keywords

Biomedical waste management, Segregation, HCW, Biohazard symbol, Evaluation

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This study was undertaken to determine the awareness regarding biomedical waste management policy and practices, attitude towards biomedical waste management and awareness regarding needle stick injury among different categories of health care workers. The study was conducted using closed ended questionnaire and distributed among 110 individuals in four categories of health care workers. The questionnaire was used to assess their knowledge on biomedical waste disposal. The resulting answers were graded and the number of correct and incorrect answers obtained for each question from individual participants. The results showed that there was a poor level of knowledge and awareness of biomedical waste generation, hazards, legislation and management among health care personnel. Major areas of deficit found were about knowledge regarding number of BMW categories (0%), definition about biomedical waste (26.6%) and definition of segregation (45.7%) among nursing and other paramedical staff. So, it is necessary for all health care providers to undergo regular training in Biomedical waste management for proper handling and disposal.

Introduction

Biomedical waste refers to any solid or liquid waste which is generated during the diagnosis, treatment, immunisation of human beings or animals or research activities in hospitals, clinics, laboratories and veterinary institutions, blood banks and health camps. The amount of waste generated under Indian conditions has been estimated as 1 to 2kgs/bed/day composed of different types of waste in which an average of about 85% is harmless and only 15% is highly infectious and dangerous and could

cause serious damage to the society and environment when it is not properly segregated and disposed off.

The government of India has enacted the BMW management and handling rules 1998 in July 1998, BMW rules 2011 and BMW rules 2016 march for environment, forest and climate change under which it is mandatory for all health care facilities to ensure that the BMW be handled and managed without any harm to human health and environment. The success of BMW management programme

rests on the knowledge and practice of the health care workers.

The aim of the study is to estimate the awareness about BMWM in health care workers (HCW) to minimise cross infection, improve the general hygiene in hospitals and minimise environmental pollution through proper treatment and disposal of waste.

The objectives of the programme are impact of awareness and suggest suitable measures for improving the efficiency of the training.

Materials and Methods

This study was conducted over a period of six months (Feb 2017 to July 2017) at a tertiary care teaching hospital in Nellore, A.P, South India with 750 beds and an average occupancy of 80% with 1500 outpatients everyday on an average. About half ton of BMW is generated everyday in the hospital. There are 76 biomedical waste generation and segregation sites in the hospital which included all wards, laboratories, operation theatres, investigation areas and intensive care units under supervision of infection control nurses and quality management team for proper segregation of Biowaste at source. The biowaste is collected daily by safe environment and sanitation (S.S-BW management pvt. Ltd.) from the hospital storage room for disposal to a place located at 14km distance.

An interview type of study was conducted at the time of awareness work shop – sanitation policy on BMW Rules 2016 march in February 2017 and July 2017 through a questionnaire comprising of multiple choice questions to test the awareness and practices regarding BMWM. The questionnaire was distributed among four categories of HCWs – doctors, nurses, laboratory technicians and

other paramedical staff including sanitary supervisors and sanitary workers of the hospital. The overall response of the participants was graded based on correct responses – as satisfactory – more than 70% - intermediate -50-70% - and unsatisfactory – less than 50%.

Results and Discussion

A total of 110 HCWs or respondents comprising of doctors-25(22.73%), nurses-30(27.27%), lab technicians-20(18.18%) and other paramedical staff-35(31.82%) participated in the study (Table 1).

Doctors included in the study were teaching faculty members and senior residents with period of work experience varying from less than 5 years to 10 years among HCW.

This study was undertaken to check the awareness regarding BMW among the hospital staff. An active biomedical waste management committee exists in the hospital which has formulated action plans and guidelines for BMWM and has been circulated to all the departments and displayed at major waste generating areas.

In this study, only 20(22%) individuals of the HCWs were aware of the number of categories of BMW. This is similar to the finding of Bhagavathi *et al.*, (17% awareness). This was very poor amongst the L.T. (0%) and nurses (0%) similar to the finding of Bhagavathi and high in studies by Madhukumar *et al.*, and Mathews *et al.*, 62.5% and 100% amongst LTs and nurses and other paramedical staff respectively.

In HCWs (45%) 46 members had knowledge about the definition of BMW (Table 2) which is similar to the findings of Bhagavathi *et al.*, (47%) and desh mukh *et al.*, (36.9%).

Fig.1 Display of Segregation of Bio-Medical Waste



Fig.2 Colour Coded Bins



Fig.3 Staff Handling Biomedical Waste



Fig.4 Colour Coded Bags with Biohazard Symbol



Table.1 Categories of health care workers and number of participants

Sl. No.	Category	Number
1.	Doctors	25
2.	Nurses	30
3.	Lab technicians	20
4.	Other paramedical staff	35
Total		110

Table.2 Awareness regarding BMWM amongst various HCWs in %

HCW Categories	BMW policy	Def. of BMW	Quality of BMW	No. Of Cat of BMW	HH due to improper	Risk of HIV inf. by NP	HB vaccinated	Awareness about BHS	BMWM team work	Def. about segregation	NSW disposal	Sharp waste disposal A/T	Use of CD	Filling & storage of	Awareness about MWD
Doctors (25)	80	72	36	52	100	100	100	88	88	56	80	96	72	52	40
Nurses (30)	93	26.6	20	0	15	86.6	93.3	83.3	16.6	66.6	80	76.6	66.6	83.3	10
Technicians (20)	90	50	30	0	50	100	100	90	90	80	90	90	90	30	20
Other paramedical staff(35)	80	28.6	17.1	20	51.4	51.4	97.1	85.7	94.2	45.7	51.4	91.4	80	71.4	20

Table 2: Def.: Definition, Qnty: Quantity, No.: Number, Cat: Categories, H.H.: Health Hazards, HBV: Hepatitis B vaccine, NP: Needle Prick, BHS: Biohazard Symbol, NSW: Non-sharp waste, A/T: according to, CC: Colour coding, CD: Chemical disinfectants, MWD: Mercury waste disposal.

Overall response based on guidelines laid by Government of India for BMWM was satisfactory (80%) (Table 2).

Awareness regarding biohazard symbol was satisfactory 96 members (87.27%) (Table 2) and similar to the findings of Madhukar *et al.*, and Bhagawathi *et al.*, (91%).

Awareness regarding Health hazards due to improper BMWM was found to be 57.28% (Tab.II) in our study. Awareness among Doctors was 25(100%) as reported similarly by Narang *et al.*, (100%) which was in contrast to the finding of Bhagawati *et al.*, (63.46%).

In our study overall response regarding the disposal of non sharp waste (NSW) was 78 (70.99%) (Tab.II) and sharps was 97(88.8%). Awareness among doctors was 24(96%) and 20(80%) followed by LTs 18(90%) and 18(90%) and nurses 24(80%) and 23(76.66%) respectively. This was similar to the study of Bhagawati *et al.*,

Awareness regarding segregation among HCW was 61.88% (68) and among doctors was 14(56%). This was in contrast to the finding of Nandavani *et al.*, (82%) in HCW and study by Selvaraj *et al.*, awareness in doctors is 98%. In our study the above findings were similar to the findings of G Bhagawati *et al.*, 53.7% and 57.7% in HCW and doctors respectively. The reason for the same could be overload of work in O.P. departments in Government set up for more patient care than waste segregation. Awareness in mercury waste disposal amongst four categories of HCWs is: doctors-40%, lab tech. and paramedical and staff nurses-10%.

Knowledge of effective management of Biomedical waste is essential in persons who generate the waste, not just who handle it.

BMWM requires conducting trainings and workshops for health care providers to prevent improper handling, transportation and disposal which can be helpful to minimise the cause of infection effectively. There is an urgent need for raising awareness on BMWM among the hospital staff in all health care setups. Involvement of hospital administrators and regular appraisal with the status of BMWM in waste management and quality steering committee play a pivotal role in executing the policies effectively.

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