

Original Research Article

Awareness and practices of biomedical waste management guidelines 2016 in an upcoming super speciality hospital of east Delhi, India

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ABSTRACT

Background: Revised and redefined biomedical waste management (BMWM) rules 2016 are an area of immediate focus for the health care personnel amidst the menace created by improper disposal of health care waste, emergence of multi drug resistant superbugs and harmful emissions.

Methods: The present cross sectional study was conducted in Rajiv Gandhi Super speciality hospital, Tahirpur, an upcoming referral hospital in east Delhi, India. The study was merged with the training sessions conducted in 13 phases. A self-administered questionnaire pertaining to biomedical waste management rules 2016 knowledge, awareness and practices was used for data collection.

Results: Of the 100 respondents consisted of 50 doctors, 30 nurses and 20 technicians, about 54% of HCP were aware about modifications in waste categories. Approximately 42% of the respondents could define sharp waste correctly while 56% had the clarity of changed specifications of BMW bags. Safe injection practices were followed by 47%.

Conclusions: Doctors were aware that there had been revision in the biomedical waste management rules in 2016 and its legal aspect but nursing staff was better in the practical implications of the same while the technicians lagged behind in both. It is of prime importance to reinforce comprehensive teaching programmes, spot trainings for the staff and continuous medical education in our hospital setting.

Keywords: Biomedical waste management, Health care personnel, Awareness, Practices

INTRODUCTION

"Bio-Medical Waste"(BMW) 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.¹ Alarmed at the menace created by improper disposal of health care waste, emergence of multi drug resistant superbugs, emissions like dioxans, furans and much more; the State pollution control board, Central pollution control board and Ministry of State (IC) Environment, Forest & Climate

Change have pinged in to reinforce Bio medical waste management BMWM rules.² These rules were notified in March 2016 gazette with a vision that implementation of the new rules would change the way and make a big difference towards clean India mission.² The health care personnel (HCP) in our hospital too needed to be reinforced with the revised BMWM 2016 guidelines; biomedical waste management being a big concern, and thinking out of the box, prompted us to plan this study. To determine the existing awareness and practices about the BMWM rules 2016 in this upcoming super speciality hospital; was our main aim. Besides we were also

concerned to identify the grey areas and take stringent measures to rectify the same.

METHODS

The present cross sectional study was conducted in Rajiv Gandhi Super speciality hospital, Tahirpur, an upcoming referral hospital in east Delhi, India. The study was merged with the training sessions conducted in 13 phases for six months from December 2017 to May 2018.

The whole idea was to train the HCP dealing with BMW in a phased manner and for this a line up was prepared well in advance. Verbal consent was obtained from the respondents: resident doctors, senior and junior residents, nursing staff and technicians. A self-administered questionnaire containing a set of questions pertaining to biomedical waste management rules 2016 knowledge, awareness and practices was used for data collection. HCP were first assessed for their existing knowledge on various aspects like handling, segregation, collection, on-site pre-treatment etc. through pre-training multiple choice questionnaire. The training sessions were conducted by the clinical microbiology department covering all aspects of BMW using power point presentation and demonstration.

Post training assessment was also conducted using the same questionnaire; followed by hands on training.

Inclusion criteria

The health care personnel: doctors, nurses and technicians who consented for the study.

Exclusion criteria

Housekeeping staff who were although trained, but not assessed as per the questionnaire because of their reluctance to participate in the study.

Data collected was compiled and entered into Microsoft excel sheets, doubly checked for any key board error and percentages were used to interpret and analyse the findings.

RESULTS

Awareness

The 100 respondents consisted of 50 Doctors (24 senior residents and 26 junior residents), 30 nurses and 20 technicians. About 54% of HCP were aware about modifications in waste categories as per biomedical waste management guidelines 2016. Nearly 77% and 69% of the respondents could identify the biohazard and cytotoxic symbol respectively. A relatively less percentage i.e. 22% were aware that a BMW committee exists in the hospital with the head of the institution as the chairperson. Approximately 42% of the respondents could define sharp waste correctly while 56% had the clarity of changed specifications of BMW bags.

Practices

Safe injection practices were followed by 47%. Majority of HCP i.e. 83% were discarding sharp waste in white translucent puncture proof containers while ampules and glassware were discarded by 75% staff in blue cardboard boxes. 61% of the staff segregated gloves in red non chlorinated bags.

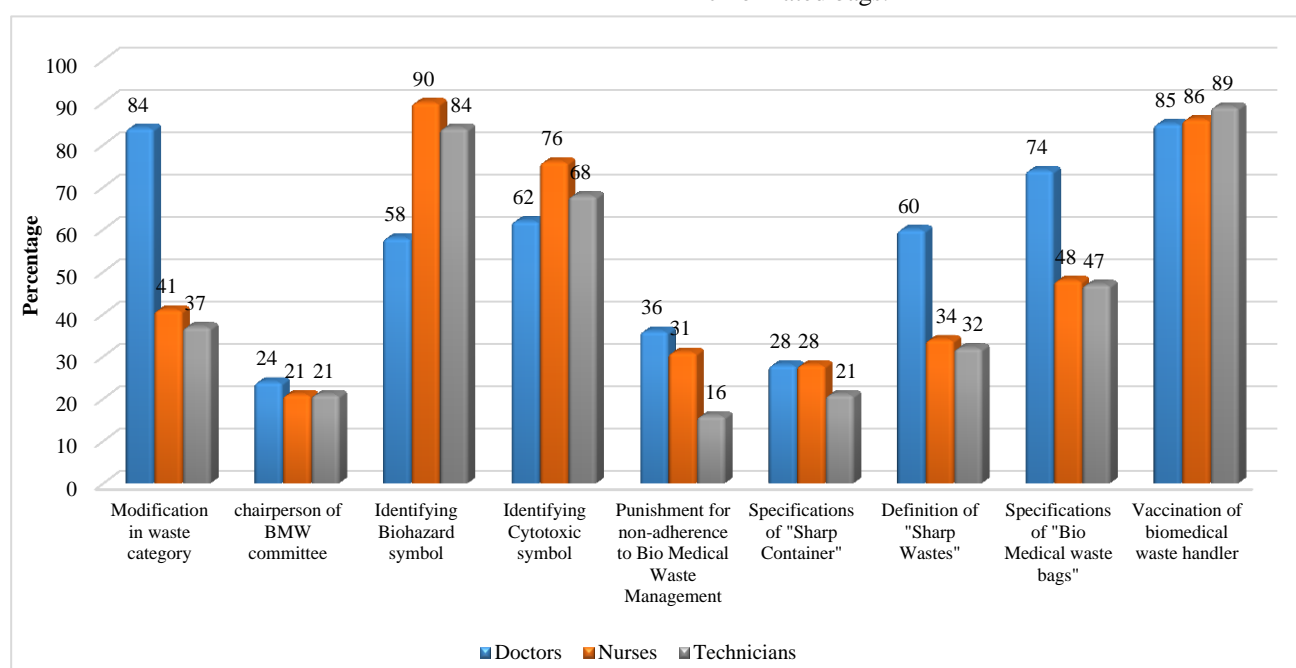


Figure 1: Awareness about biomedical waste management among health care personnel.

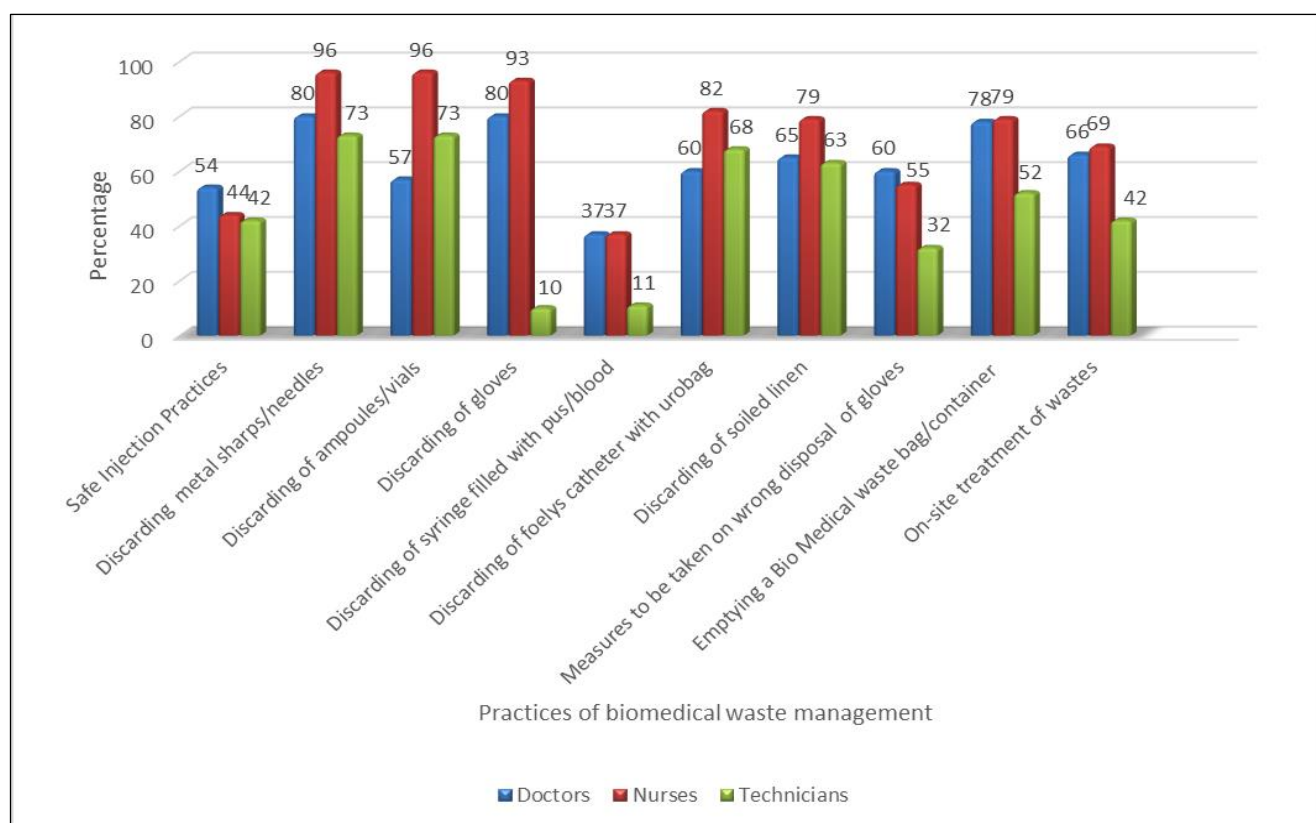


Figure 2: Practices of biochemical waste management amongst health care personnel.

DISCUSSION

The Standard operating procedure (SOP) has been formulated for BMW by the biomedical waste management committee (BMWMC) of the hospital, which is displayed at waste generating areas and available for review as soft copy on all monitors. The present study revealed that the health care workers although consisting of Doctors, nurses and technicians; had insufficient knowledge and practices of biomedical waste management. The study of Sehgal et al in Delhi on the contrary depicted satisfactory awareness amongst Doctors and nursing staff, but major pitfall among the housekeeping.³ Awareness about biomedical waste categories as per BMW 2016 was maximum amongst doctors 84% followed by nurses and technicians 41% and 37% respectively. This is a similar finding to Bhagwati et al where awareness was 50% amongst doctors but very poor amongst nurses and technicians.⁴ On the contrary Madhukumar et al reported only 3.13% study subjects knew about categories of HCW of which 62.5% were technicians and Mathew et al reported extraordinary awareness 65% and 100% amongst the technicians and paramedical staff respectively.^{5,6} About 96% of the nurses could identify the biohazard symbol correctly; followed by 84% of the technicians and least among the doctors. This is similar to Vishal et al where the doctors were least aware about the symbol.⁷

The overall practice of discarding sharp waste in puncture proof containers was 83%; maximum amongst nurses 96%, followed by doctors 80% and then technicians 73%. This is consistent with finding of Bhagwati et al where they found overall sharp disposal accurately amongst 86% of health care workers.⁴ Also in a study conducted by Ananthachari et al, 61.6% knew that waste sharps should be disposed in white puncture proof containers of which 25.7% nursing staffs, 16.3% interns, 13.9% doctors, and 5.6% laboratory technicians opined correctly.⁸ However in a study conducted by Singh et al the rate was comparatively as low as 20% only.⁹ Discarding gloves in red non chlorinated bags was best practised by the nurses; followed by doctors and least by the technicians; the finding is similar to Chudasama et al, where majority of the staff practised safe and correct method of disposal of plastic items.¹⁰ Discarding glass waste (ampoules and vials) in blue card boxes was practised by 96% of the nurses correctly, followed by technicians and least by Doctors. This is because of the revised biomedical waste management guidelines 2016 and more nurses being trained for the same.² Overall practices of the nurses were better than the doctors in the present study, on the contrary findings of Malini et al reported that majority of the doctors followed correct practices followed by nursing staff and lab technicians.¹¹ Ranu et al also reported nursing staff practices had an edge over the doctors and the lab technicians.¹²

CONCLUSION

In our study; though the doctors were aware that there had been revision in the biomedical waste management rules in 2016 and its legal aspect but nursing staff was better in the practical implications of the same while the technicians lagged behind in awareness and practices as well. Therefore, it is of prime importance to reinforce comprehensive teaching programmes, spot trainings for the staff and continuous medical education for doctors. Percolating the key message “Waste segregation at the site of generation” at the grass root level is the need of the hour.

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Ethical approval: Not required

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