

**Original article:**

## **Awareness and practices regarding biomedical waste management among nursing staff in tertiary care hospital**

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### **ABSTRACT-**

**Introduction:** Worldwide almost 18 to 64% of health care institutes does not have satisfactory Biomedical waste management (BMW) facilities. Inadequate management of biomedical waste can produce risk to health care worker of getting diseases like tuberculosis, tetanus etc. With this background present study was conducted to assess the awareness regarding biomedical waste management of hospital nursing staff.

**Methodology-** A hospital based cross-sectional study was carried out among 100 nursing staff working in Govt. Medical College and General Hospital, Miraj.

**Result and Discussion-** Majority had knowledge regarding categories of BMW and colour coding, 63% about sharp disposal, 58% about steps in management of BMW and 66% about diseases transmitted by it. 62% failed to identify biohazard symbol and only 22% knew about source and quantity of BMW generated, though 53% had admitted about knowing Govt. guidelines. Only 43% had taken vaccine against HbsAg.

**Conclusion-** The overall awareness among nursing staff regarding BMW management is satisfactory. It is necessary to have strict supervision by the administrative authority and periodical reorientation on BMW guidelines.

**Key Words-** Biomedical waste management (BMWM), Biomedical waste (BMW), healthcare worker, nurses, tertiary care hospital.

### **INTRODUCTION**

Biomedical waste is “waste generated during diagnosis, treatment or immunization of human beings or animals or in research activities pertaining there to or in the production or testing of biological.”<sup>1</sup> The amount of biomedical waste generated in our country is increasing day by day.<sup>2</sup> India is the 1<sup>st</sup> country that has made constitutional provisions for protection and improvement of the environment.<sup>2</sup> Out of total waste generated, 80-85% is general waste, that is non-infectious and the remaining 15% is infectious waste.<sup>1</sup> In developed countries approximately 1-5 kg of waste is generated per bed per day. In India it is 2kg per bed per day.<sup>2</sup> Inadequate management of biomedical waste can spread many diseases like tuberculosis, pneumonia, tetanus, diarrhoeal diseases, but the dangerous ones are HIV, Hep B, Hep C and it also produces air, water and soil pollution. The growth of BMW is expected at around 8% annually.<sup>3</sup> The responsibilities of a hospital do not end up with medical treatment only.<sup>4</sup> In broader perspectives, service towards the ‘good’ health of society is a default duty of any health care set up, so proper management of biomedical waste is of utmost public health importance.<sup>4</sup>

## METHODOLOGY

It was hospital based cross sectional study conducted at Govt. Medical college and General Hospital Miraj. A questionnaire consisting of 12 questions covering BMW management was prepared. After taking institutional permission one day training programme was conducted for nurses regarding BMWM on 7/3/2019. All nursing staff was invited individually to participate in the study. Data was collected after verbal consent obtained from individual participant. Total 100 nursing staff participated in the present study. The data was compiled and interpretation was done by using percentages through Microsoft excel 2007. The grading was given as poor, average and good based on score in questionnaire. (poor = less than 50%, average =51% to 70%, good=above 70%)

## RESULTS

In present study, majority were female (63%) and only 37% were male.

Table 1- Grading of participant according to score in questionnaire

Poor	13%
Average	29%
Good	58%

Table 2- AWARENESS AND PRACTICES REGARDING BIOMEDICAL WASTE MANAGEMENT

Sr.No	Questions	Answered Yes(%)	Answered No(%)
1	BMW policy by Govt.of India	53	47
2	Definition of BMW	68	32
3	Quantity of BMW	22	78
4	Categories of BMW	68	32
5	Health hazards due to improper management of BMW	66	34
6	Segregation acc to colour coding	69	31
7	Biological hazard symbol	38	62
8	Treatment methods used in BMW management	58	42
9	Sharp disposal	63	37
10	Needle prick injury	53	47
11	Hbs Ag vaccination	43	57

## DISCUSSION

As per the biomedical waste (management and handling) rules 1998, any violation of the rules by any person is punishable.<sup>5</sup> Punishment can be fine or imprisonment under the Environment Protection Act 1986. The BMWM rules 2011 states that it's the duty of every single occupier of an institution generating biomedical wastes to take all necessary steps to ensure safe handling and disposal of BMW.<sup>6</sup> BMW is hazardous, infectious and pathological in nature. It contaminates the nontoxic and non hazardous waste. It also increases the growth of various pathogens,

vectors responsible for diseases.<sup>7</sup> With this background present study was conducted to know the awareness and practices about BMWM.

In present study it was observed that 53% of the nursing staff aware about the guidelines laid down by Govt. of India for BMWM. It was 89% in study done by Nigam KK et al and 45.4% in Anand P et al.<sup>6,8</sup> Overall 68% of nursing staff were knew about, what BMW comprises. In same study done by Nigam KK et al, it was 95% and 36.9% in Deshmukh et al study.<sup>6,9</sup> Very less, that is only 22% of participants knew about what is the source and how much BMW being generated at their workplace. Which is very much less than similar study done by Anand P et al (91%) and 47% in Feridos KJ et al study.<sup>8,10</sup>

On an average 68% of nursing staff have sufficient knowledge about categories of BMW, which is comparable with similar study done by Nigam KK et al (68%) and Anand P et al (72.7%).<sup>6,8</sup> 66% of participants knew about infectious diseases which can be transmitted by improper handling of BMW. It was higher in studies done by Nigam KK et al (76%), Anand P et al (81.8%) while Feridos KJ reported lower (53%).<sup>6,8,10</sup> Majority, 69% of participant have practice of segregation of BMW at their working place according to colour coding. Study done by Nigam KK et al had 52% while 86.3% in Anand P et al study.<sup>6,8</sup> Only 38% of nursing staff in present study knew about biohazard symbol and its importance. In study done by Bhagwati G et al 86.20% were aware while 52.7% in study done by Anand P et al.<sup>11,8</sup>

58% had knowledge about methods of BMW disposal in this study, It is higher in studies done by Bhagwati G et al (79%) and Anand P et al (72.7%).<sup>11,8</sup> In present study 63% knew about how to dispose sharp waste, which is similar to study done by Nigam KK et al (65%) and higher than study done by Feridos KJ et al.<sup>6,10</sup> Only 53% were able to answer what to do after getting needle prick injury. It was higher than study done by Anand P et al 18.1% and Bhagwati G et al 37.93%.<sup>8,11</sup> Very few had vaccination against HbsAg while Anand P et al (68.1%) and Bhagwati G et al (90%) reported higher percentage of vaccination.<sup>8,11</sup>

## CONCLUSION

Overall awareness and knowledge was average regarding BMWM but need to be assessed regularly and for that continuous training programme should be arranged. Concerned institutional authority must make compulsory instructions that every health care worker should get HBV and TT vaccination. Waste disposal is a social responsibility, so everyone should be aware of it and should act accordingly.

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