



# Knowledge, Attitude and Practice of Biomedical Waste Management in Health Care Personnel of Saurashtra Region of Gujarat

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## ABSTRACT

**Background:** Every concerned health personnel are expected to have proper knowledge, practice and capacity to guide others for waste collection and management.

**Objectives:** Objectives of this study was to assess the knowledge, attitude and practice regarding biomedical waste management among healthcare personnel.

**Materials and Methods:** It was a cross-sectional study involving healthcare personnel of various PHCs & CHCs of the district. All the participants were interviewed personally by Predesigned and pretested questionnaire about various aspect of biomedical waste management.

**Results:** Out of the total 167 participants, 94.01% of healthcare person were aware about colour code system of waste segregation but only 64.07% knows that they are responsible for waste segregation. It was found that 95.80% healthcare personnel like to attain training and 92.81% of them believe that there should be legal provision for safe waste management. However, only 58.08% of them were practice of waste segregation into proper colour code bag and with using protective device.

**Conclusion:** knowledge and practice of various aspects of biomedical waste management are lacking in considerable amount in health personal and there is urgent need for regular on job training and enforcement of biomedical waste management rules at these levels.

**Key words:** health personnel, bio medical waste

## INTRODUCTION

The healthcare services during providing services to community inevitably create waste which is hazardous to health and carries a higher potential for infection and injury than any other type of waste.<sup>1</sup> The biomedical waste define as any waste, which is generated during the diagnosis, treatment or immunization of human beings or animals or in research activities pertaining thereto or in the production or testing of biological.<sup>2</sup>

The management of healthcare waste is a very much important to public health and infection con-

trol specialists as well as the general public.<sup>3</sup> It has become a burning issue as it poses potential health risks and damage to the environment. Keeping in view inappropriate biomedical waste management, the Ministry of Environment and Forest notified the "Biomedical waste (management and handling) Rules, 1998" in July 1998.

The management of hospital waste requires its segregation and removal from the hospitals in such a way that it will not be a source of health hazards to patients', health care personnel and environment.<sup>4</sup> Health care workers have an important opportu-

nity to manage the environmental effects of their practice. Their effort may seem small but each step builds a base of sound behavior and thinking that are necessary for the success of the whole.<sup>5</sup>

Every concerned health personnel should have proper knowledge, attitude and practice for waste collection and management.<sup>6</sup> The objective of biomedical waste management are mainly to reduce waste generation to ensure its efficient collection, handling as well as safe disposal in such a way that it control infection and improves safety for employees working in the system.<sup>7</sup>

Adequate knowledge about the health hazard of hospital waste, proper technique and methods of handling the waste and practice of safety measures can go a long way toward the safe disposal of the hazardous waste and protect community from various adverse effects of the hazardous waste. With this background, this study was conducted with **the objectives** to assess the knowledge, attitude and practice regarding biomedical waste management among healthcare personnel.

**MATERIAL AND METHODS**

The study participants were healthcare personnel - male & female, of various PHCs & CHCs of the district. It was a cross-sectional study. The study period was one year, from March 2012 to February 2013. All 167 health care personnel (50 doctors, 80 nurses, 14 lab Technicians and 22 auxiliary workers) working in various PHCs & CHCs of the district were included for the study. a structured proforma was prepared and after pilot study of 10 participants pre-designed and pre-tested profoma was used for the study. And these 10 participants are not included in study results.

After explaining the purpose of the study, consent for participation was taken from each of healthcare professional. They were assured of confidentiality of their responses by the investigator and then All the participant of study were interviewed personally about various aspect of biomedical waste management.

The data were entered in the computer, using the Microsoft excel 2007. Analysis was also done using the same software and results were presented.

**Ethical approval:** Present study was part of a dissertation submitted to Saurashtra University for the degree of MD (preventive and social medicine) and the study protocol was approved before the initiation of the study by institute ethical committee of Shree M P Shah govt. medical college, Jamnagar.

**RESULTS**

The study subjects consisted of 167 healthcare personnel including Medical officer, Nurses, Lab. Technician and Auxiliary workers of Primary and Community Health Centre of the study district (Table 1).

Table 2 shows that only 26.94% of health care workers were aware about biomedical waste (management and handling) rules, 1998 and 76.64% of health care workers were aware about biohazard symbol. Table also reveals that 83.83% of workers were aware about segregation of waste at the point of generation.

In present study 80% of Medical officers and 74.04% of nursing staff had knowledge that every healthcare worker is responsible for waste segregation, 94.01% healthcare workers were aware about colour coding of waste segregation and 37.12% were aware that untreated waste should not be kept for more than 48 hours.

**Table 1: Distribution of study participants**

Study Subject	Primary HC	Community HC	Total (n=167)
Medical officers	20 (40%)	30 (60%)	50 (29.9%)
Nurses	19 (23.4%)	62 (76.5%)	81 (48.5%)
Lab. Technicians	06 (42.8%)	08 (57.1%)	14 (8.4%)
Auxillary workers	08 (36.3%)	14 (63.6%)	22 (13.2%)
Total	53 (31.7%)	114 (68.2%)	167 (100%)

HC=Health Centre

**Table: 2 Knowledge of study participants on biomedical waste**

Knowledge about	Medical officers (n=50)	Nurses (n=81)	Lab. Technicians (n=14)	Auxillary workers (n=22)	Total (n=167)
biomedical waste handling rule	28 (56)	15 (18.5)	02 (14.3)	00 (00)	45 (26.9)
identification of biohazard symbol	45 (90)	75 (92.6)	06 (42.8)	02 (9)	128 (76.6)
where waste to be segregated	48 (96)	79 (96.3)	08 (57.1)	05 (27.7)	140 (83.8)
who are responsible for waste segregation	40 (80)	60 (74.0)	07 (50)	00 (00)	107 (64.0)
Colour code system of waste segregation	50 (100)	81 (100)	10 (71.4)	16 (72.7)	157 (94)
Untreated waste should not be kept for >48 hours	40 (80)	20 (24.7)	02 (14.3)	00 (00.0)	62 (37.1)
Name of puncture proof bag	45 (90)	30 (37)	05 (35.7)	00 (00)	80 (47.9)
Authorization obtain from GPCB	30 (60)	62 (76.5)	06 (42.8)	00 (00)	98 (58.6)

**Table: 3 Attitude of study participants about safe biomedical waste management**

Variables	Participants (%)
Attain training	160 (95.8)
Legal provision	155 (92.8)
Extra burden on work	00 (00)
Increases financial burden on hospital	10 (5.9)
Require urgent attention by hospital Administration	05 (2.9)

Our study also reveals that less than half (47.90%) healthcare workers were aware about puncture proof bag and 58.68% had the knowledge about requirement of obtaining authorization from Gujarat pollution and control board by health care facility.

Table 3 shows that 95.80% healthcare personnel had shows interest in attaining training, 92.81% believed that a legal provision for safe bio medical waste management is required and 100% believed that safe disposal of biomedical waste is our duty and not extra burden.

Present study shows Out of 167, 157 subjects believed that expenditure incurred as safe disposal is not an extra financial burden on hospital and 2.99% healthcare opined that waste management is not being properly done in hospital and require attention by administration.

Table 4 shows that 58.08% of healthcare workers were practicing proper waste segregation and using personal protective equipments.

**Table 4: Practice of study participants about safe biomedical waste management**

Practice	Medical Officers (n=50)	Nurses (n=81)	Lab. Technicians (n=14)	Auxiliary Workers (n=22)	Total (n=167)
Proper waste segregation	20(40%)	70(86.4%)	07(50%)	10(45.4%)	97(58.0%)
Waste segregate using personal protective equipment	20(40%)	70(86.4%)	07(50%)	10(45.5%)	97(58.0%)

**DISCUSSION**

It was observed that 56 percent doctors were aware but most of the Nursing staff, lab technician and auxiliary staff were not aware about biomedical waste management rule. Contrary to this Savan Sara Mathew<sup>8</sup> found in his study that 85.4% doctors 73.7% nurses, 71.4% paramedical staff were aware about BMW Management Rules 1998. And in a study by Bathma vishal<sup>9</sup> 92.1% doctors were aware against nurses (54.5%) and Lab-technicians (47.6%).

As far as identification of biohazard symbol is concerned Savan Sara Mathew found that 79.2%) doctors, 86.8% nurses and 92.9% paramedical staff could identify biohazard symbol.<sup>8</sup>

As far as opinion on responsible of segregation of waste is concerned it was found by Abubakar Umar that 59 percent opined that this is a job of auxillary staff and only a very small percentage (5.29%) opined that doctors too have role in segregation of waste at point of generation.<sup>10</sup>

Radha R study shows that 39.2% doctors, 37.3% nursing staff, 18.1% lab. Technician and 16.6% sanitary staff were not aware about time limit for untreated waste that it should not be kept more than 48 hours.<sup>11</sup>

Level of knowledge of puncture proof bag among health care personals in a study by as Vanesh Mathur study was revealed that 65.3% doctors, 71.6% nurses, 69.2% Lab. Technician and 18.6% sanitary staff were knowledgeable.<sup>12</sup> where as our

study shows that 90 % doctor and 37% nursing staff, 35 % lab. technician and none of Auxiliary worker had this knowledge.

Discrepancy of various component of knowledge were found in present study with other studies draw attention that regular training of health care personnel is lacking in this region.

In study by Abubakar Umar<sup>10</sup> it was reported that (85%) of participants were interested in attending a program on Bio-medical waste management against our study which shows 95.80%.

Abubakar Umar<sup>10</sup> found in his study that 47% of the respondents believed that safe BMW management efforts will increase the financial burden on the hospital, Alok Sharma<sup>14</sup> found to be 50% where as 6% believed so in our study.

Study by Alok Sharma<sup>13</sup> as well as in this study, it was opined by staff that there is no extra work burden in disposal of BMW, where as in study by Abubakar Umar<sup>10</sup> it was opine by 36% of workers that it is was extra work burden.

As far as practice of proper waste segregation is concerned it was found in this study that 58% of staff was practicing it where as in a study by Mohapatra Archisman<sup>14</sup> it was nearly 37% and by Chudasama Rajesh<sup>15</sup> it was 86.9%

As per present study instead of participants attitude toward bio medical waste management was good, practice were lacing in considerable amount indicates that administration not bothering this burning issue as serious as required.

## CONCLUSION

In present study majority of Medical officers and nursing staff had knowledge that every healthcare worker is responsible for waste segregation according to colour coding but many of them not aware about of puncture proof bag. Healthcare personnel had shows interest in attaining training, believed that a legal provision for safe bio medical waste management is required, safe disposal of biomedical waste is our duty and not extra burden and waste management is not being properly done in hospital and require attention by administration. But only nearly half of them were practicing proper waste segregation and using personal protective equipments. So regular on job training and administration support is required for further improvement in knowledge attitude and behavior of these health care workers.

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