

## Problem Faced by Waste Handling Workers During Handling of Biomedical Waste

SWATI SRIVASTAVA<sup>1</sup> AND RITU SINGH<sup>V1</sup>

<sup>1</sup>Department of Family Resource Management, MPUAT, Udaipur  
email : swati9101990@gmail.com

### ABSTRACT

**Biomedical waste management has recently emerged as an issue of major concern not only to hospitals, nursing home authorities but also to the environmental and law enforcement agencies, media and the general public. The waste handling workers do not follow the rules of BWM regularly. It was observed that they were facing certain health problems due to handling BW in hospitals. The present investigation was conducted in Udaipur city of Rajasthan state to know the problems faced by waste handling workers in one government hospital, two private hospitals and common treatment facility.**

**Key words** *Biomedical waste, problem, waste handling workers*

Hospital is one of the complex institutions which are frequented by people from every walks of life in the society without any distinction between age, sex, race and religion. This is over and above the normal inhabitants of hospital i.e patients and staff. All of them produce waste which is increasing in its amount and type due to advances in scientific knowledge and is creating its impact(Rao and Garg,1994).

In country like India, where there is big and complex health care system, mixed economy, private and government hospitals working together; while providing services generate lot of waste. Till July 1998, there was no system for proper waste disposal. Most of the hospitals were disposing their waste along with general waste. For prevention of these improper practices, the government of India had launched a law known as 'Biomedical Waste (Management and Handling) rule, 1998". Under this law the Government has given specific guidelines for management of biomedical waste. Biomedical waste is defined as any solid, fluid, liquid waste including container and intermediate product, which is generated during diagnosis, treatment or immunization of human beings or in research activities or in production or testing of biological products Biomedical Waste (Management and Handling) Rules 1998.The government of India notification, 1998 specifies that biomedical waste management is a part of hospital hygiene and maintenance activities.

It is estimated that 10-25% of the health care waste generated is hazardous and causes serious health problems (WHO, Geneva, 1999). Biomedical waste management is

currently a burning issue more so with the increasing health care facilities and increasing waste generation (Mathur et al.2011).

Approximately 75-90% of the biomedical waste is non-hazardous and as harmless as any other municipal waste. The remaining 10-25% is hazardous and can be injurious to humans or animals and can be injurious to humans or animals and deleterious to environment. It is important to realize that if both these types are mixed together then the whole waste becomes harmful(Singh et al.2007).It is estimated that annually about 0.33 million tons of biomedical waste is generated in India and the waste generation rate ranges from 0.5 to 2.0 kg per bed per day (Patil and Shekdar ,2001).Biomedical waste is mainly classified as biological and non- biological waste, some waste may be infectious and some may be non-infectious(Fig1).Infectious waste can be serious threat to human health if it is not managed in a scientific manner.

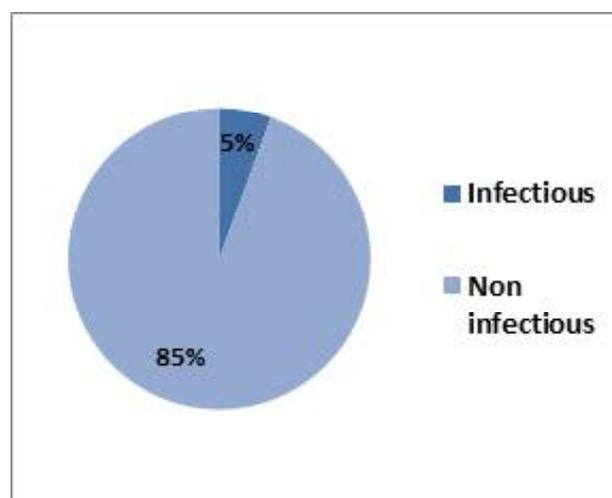


Fig 1. Composition of biomedical waste

Biomedical waste handling and disposal is often considered only the job of class IV workers. These workers are rarely provided with immunization facilities, personal protective clothing and training related to biomedical waste management. Proper 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 towards the safe disposal of hazardous biomedical waste and protect the community from various adverse effects of the hazardous waste.

**Table 1. Problems faced during the process of BWM**

S.No.	n=255									Types of problem
	CBWTF n <sub>3</sub> =15			Private hospitals n <sub>2</sub> =150			Government hospital n <sub>1</sub> =90			
	Never	Sometimes	Always	Never	Sometimes	Always	Never	Sometimes	Always	
1.	9 (60)	6 (40)	-	101 (67.33)	49 (32.66)	-	34 (37.77)	56 (62.22)	-	Skin Irritation
2.	7 (46.66)	8 (53.33)	-	56 (37.33)	61 (40.66)	33 (21.33)	38 (42.22)	35 (38.88)	17 (18.88)	Needle injury
3.	6 (40)	9 (60)	-	66 (44)	39 (26)	45 (30)	40 (44.44)	31 (34.44)	19 (21.11)	Infection

Note: Table contains multiple responses. Figures in parenthesis are percentage

## MATERIAL AND METHODS

The methodology of this particular study was followed at two stages:

**Stage I:** In the hospital which includes generation, segregation, collection and storage of biomedical waste management in various departments.

**Stage II:** Outside the hospital which includes transportation, treatment and final disposal of biomedical waste by common biomedical waste treatment facility

This investigation was conducted in Udaipur city of Rajasthan state. This study was carried out in one government, two private hospitals and common biomedical waste treatment facility. In government hospital with eighteen departments and two private hospitals with fifteen departments each and one common biomedical waste treatment facility were selected. From each department 5 waste handling workers were selected randomly to judge the extent of health and safety practices and extent of its use. Further, these selected waste handling workers were also the sample to assess the health and safety practices adopted and extent of its use in managing the biomedical waste in hospitals. Thus in all 240 waste handling workers including 90 from government and 150 from private hospitals (75 from each private hospital) were selected. Whereas, 15 waste handling workers from the common biomedical waste treatment facility were selected. An interview schedule and observation schedule was developed to assess the health and safety practices and extent of its use by waste handling workers both at hospitals and at common biomedical waste treatment facility.

## RESULTS AND DISCUSSION

There is a great risk to all those who generate, collect,

segregate, handle, package, store, transport, treat and dispose biomedical waste in hospitals. Occupational exposure to blood can result from percutaneous injury (needle stick or other sharps injury), mucocutaneous injury (splash of blood or other body fluids into the eyes, nose or mouth) or blood contact with non-intact skin. The most common cause of needle stick injury is two handed recapping and the unsafe collection and disposal of waste sharps.

The comprehensive rule covers various aspects of dealing with waste, specifying the duty of the waste handling workers of the hospital generating BW as to ensure safe handling, on segregation, packing, transportation and storage specifics, submission of annual report to Pollution Control Board of categories and waste generated, maintenance of records on generation, collection, reception, storage, transportation, treatment and disposal, type of waste to be incinerated and colour coding for segregation. The waste handling workers of the hospital generating BW are required to take all steps to ensure that such waste is handled without any adverse effect on human health and the environment.

The waste handling workers do not follow the rules of BWM regularly. It was observed that they were facing certain health problems due to handling BW in hospitals. The above Table 4.3.3 indicates that 62.22 percent waste handling workers in government hospital, 32.66 percent respondents in both private hospitals and very few i.e.40 percent waste handling workers in CBWTF sometime faced the problem of skin irritation whereas needle injury was always faced by 18.88 percent and 21.33 percent waste handling workers in government and private hospitals respectively. The same problem was mentioned by 38.88 percent, 40.66 percent and 53.33 percent respondents

**Table 2. Reporting of problems to authorities during BWM n=255**

S. No.	CBWTF n <sub>3</sub> =15			Private hospitals n <sub>2</sub> =150			Govt. hospital n <sub>1</sub> =90			Authorities for reporting of problems
	Never	Sometimes	Always	Never	Sometimes	Always	Never	Sometimes	Always	
1.	-	-	-	-	75 (50)	-	-	-	-	Nursing Superintendent
2.	-	-	-	-	-	-	-	-	-	Manager
3.	-	-	-	-	75 (50)	-	-	-	57 (63.33)	In charge
4.	-	15 (100)	-	-	-	-	-	-	-	Supervisor
5.	-	-	-	-	-	-	33 (36.66)	-	-	Nobody
6.	-	15	-	-	150	-	-	-	90	Total

Note: Figures in parenthesis are percentage

sometimes in government and both private hospitals and in CBWTF. An infectious problem was faced always by 21.11 percent and 30 percent waste handling workers in government and both private hospitals. Whereas 34.44 percent, 26 percent and 60 percent respondents faced the same problem sometime in government and private hospitals and CBWTF respectively. None of them have faced any serious accidents during the process of handling BW. The reason may be that they were wearing proper protective clothing and have attended the training sometimes during their tannure in the institutions.

During segregation special emphasis should be given to infectious waste, hazardous and sharp waste. From among all the categories of waste the "sharps" which include syringes, needle, broken glassware, scalpel, blades etc. have highest disease transmission potential. When waste handling workers were injured by sharps, needles etc. they have reported to their authorities who were responsible to provide medical help. The Table 4.3.4 indicates that 50 percent respondents always reported to their nursing superintendent in private hospital A when they faced any type of problem while handling of BW. And 50 percent waste handling workers reported to their Incharge in private hospital-B whereas 63.33 percent respondents in government hospital have always reported to Incharge about the problem/injuries but 36.66 percent waste handling workers of the same hospital never reported to any authorities about their problems. Although 100 respondents in CBWTF sometimes informed to their supervisor when they faced any problem/injuries during disposal of BW. Due to lack of knowledge these workers do not approach authorities when they are in difficult situation.

## DISCUSSION

Majority of waste handling workers (62.22%) in government hospital, 32.66 percent respondents in private hospital and very few that was 40 percent waste handling workers in CBWTF sometime faced the problem of skin irritation whereas needle injury was always faced by 18.88 percent and 21.33 percent waste handling workers in all the selected hospitals. The same problem was mentioned by 38.88 percent, 40.66 percent and 53.33 percent respondents sometimes in government and both private hospitals and in CBWTF. Infectious problems was faced always by waste handling workers 21.11 percent, 30 percent in government and both private hospitals. Whereas 34.44 percent, 26 percent and 60 percent respondents faced the same problem sometime in the all the hospitals and CBWTF respectively. Nearly, 50 percent respondents reported to their nursing superintendent always in private hospital –A and 50 percent waste handling workers reported to their Incharge in private hospital-B whereas 63.33 percent respondents in government hospital reported to Incharge about the problem/injuries they faced. Although 100 percent respondents in CBWTF sometimes inform to their supervisor when they faced any problem/injuries during disposal of BW.

## CONCLUSION

The study shows that problem faced by waste handling workers during handling of biomedical waste in hospital. It can be said that several health hazards are associated with poor management of BW like injury from sharps to waste handling workers in hospital. Further, the intervention can be done by providing training programmes, so that the knowledge on the biomedical waste management can be improved.

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