

Original Research Article

Assessment of Knowledge, Attitude, Practices of Biomedical Waste management among Healthcare personnel

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Abstract: Proper handling and disposal is necessary to follow in all hospitals, clinics, nursing homes, ambulatory settings, mainly to prevent transmission of dangerous infectious pathogens like HIV, HBV. The purpose of this study is to provide a safe environment that is free from infection for the patient as well as the employees at hospital. A total of 120 health care personnel 30 from in each group (doctors, nurses, paramedics, housekeeping staff) were considered and requested to answer the pre-structured questionnaire within pre determined time. The selected group of health care personnel answers related to KAP (Knowledge, Attitude, Practices) of biomedical waste (BMW) management was analyzed. Practices of KAP were also assessed during their work in OPDs, wards and ICUs. All the results were tabulated and assessed. On assessing management of BMW, Doctors have better orientation towards knowledge, attitude, practices when compared to nurses, followed by paramedics and housekeeping staff. Doctors and Nurses practices are low when compared to knowledge and attitude. Whereas, Paramedics and Housekeeping staff practices are better in practices than knowledge and attitude. Out of 30 Housekeeping or sanitary staff, most of them were intermediate and low grade, whereas nurses and paramedical staff were high and intermediate grade. To improve the practices and knowledge at all steps of health care delivery, need regular intensive training programmes to be conducted by administration. At the same time adequate resources to be provided to healthcare personnel to work efficiently.

Keywords: BioMedical Waste Management, Attitude, Knowledge, Practice

INTRODUCTION

Government of India implemented Medical waste rules in 1998 and defined as "Biomedical or hospital waste" refers to any waste generated while providing healthcare, performing research and undertaking investigations or related procedures on human beings or animals in hospitals, clinics, laboratories or similar establishments [1].

It is estimated that in most of the health care settings, the biomedical waste generates is 1 to 2 kg/bed/day, 10% is infectious waste like human or animal tissues, dressings, soiled items, laboratory samples etc.,[2]. BMW is forming approximately 1-2% of total municipal solid waste stream [3].

Biomedical waste has recently emerged as an issue of major concern not only to hospitals, nursing

homes, but to the environmental and law-enforcing agencies, media, and the general public also [4]. The main objectives of Medical waste management are to prevent harm resulting from waste, minimize its volume, retrieve reusable materials, ensure safe and economical disposal.

The proper management of health-care waste depends on good administration and organization along with adequate legislation, financing, and active participation of trained and informed staff [5,6]. Proper handling and disposal is necessary to follow in all hospitals, clinics, nursing homes, ambulatory settings, mainly to prevent transmission of dangerous infectious pathogens like HIV, HBV [2]. Proper segregation is needed which is responsibility of every health care personnel, is to avoid mixing of infectious and non infectious waste.

The purpose of this study is to provide a safe environment that is free from infection for the patient as well as the employees at hospital. We mainly focused on knowledge, attitude and practices of biomedical waste management among health care personnel.

MATERIALS AND METHODS

A study was done prospectively pertaining to knowledge, attitude, practices of biomedical waste

management at ACSR Government Medical College, Nellore, Andhra Pradesh in the year 2016. ACSR Government Medical College has a separate 3 storied block for storage of biomedical waste management before handling over to private agency. Private agencies are responsible for safe disposal of medical waste by following waste management rules. Categories of Medical waste management followed are [7]:

Table-1: Categories and Disposal of Biomedical waste management

Category	Type of waste	Treatment of disposal
Category 1	Human Anatomical waste	Incineration / Deep burial
Category 2	Animal waste	Incineration / Deep burial
Category 3	Microbiology and Biotechnology waste	Local/autoclaving/micro-waving/incineration
Category 4	Waste sharps	Disinfection/Autoclaving/Micro waving/mutilation and shredding
Category 5	Discarded medicines and cytotoxic drugs	Incineration/Destruction and Disposal in land fills
Category 6	Soiled waste	Incineration/autoclaving/micro waving
Category 7	Solid waste	Disinfection/Autoclaving/Micro waving/mutilation and shredding
Category 8	Liquid waste	Chemical disinfection
Category 9	Incineration ash	Disposal in Municipal land fills
Category 10	Chemical waste	Chemical treatment & discharge into drains for liquid and secural landfills for solids

Doctors, Nurses, Paramedical staff, housekeeping staff who gave consent were included in this study. A total of 120 health care personnel, 30 from in each group (doctors, nurses, paramedics, housekeeping staff) were considered. A structured questionnaire related to medical waste and its management was prepared before doing this study.

In our hospital, color coding bags followed for medical waste generation are: Yellow for discarding infected waste and cytotoxic waste, red for infected rubber & plastic waste like gloves, tubing, green for discarding general waste, blue for plastic proof container for discarding sharps, needles. After segregation of waste by the generator himself or herself at particular units in hospital. Housekeeping staff will take responsibility of transportation from units to waste storage block, where the waste stored for 24 hours. Private waste management takes responsibility of waste disposal within 24 hours.

120 health care personnel were requested to answer the pre-structured questionnaire within pre determined time. The selected group of health care personnel answers related to KAP (Knowledge,

Attitude, Practices) of Biomedical waste (BMW) management were analyzed. Practices of KAP were also assessed during their work in OPDs, wards and ICUs. All the results were tabulated and assessed.

RESULTS

A pre structured questionnaire related to KAP of Medical waste management contains questions pertaining to color coding, rules existence, disposal, incinerator, PPE, Biohazard symbol, Infectious waste producing in hospitals, sharps disposal, is it compulsory to follow, is it important for health care delivery, storage, transportation, communication between housekeeping staff, nurses and private agencies, BMW management at wards, OPDs, ICUs.

On assessing management of BMW, Doctors have better orientation towards knowledge, attitude, practices when compared to nurses, followed by paramedics and housekeeping staff. Doctors and Nurses practices are low when compared to knowledge and attitude. Whereas, Paramedics and Housekeeping staff practices are better in practices than knowledge and attitude (Table No.2).

Table-2: KAP of Biomedical waste management among Health care personnel

	Doctors (n=30)		Nurses (n=30)		Paramedics (n=30)		Housekeeping (n=30)	
	No. of persons	Percentage	No. of persons	Percentage	No. of persons	Percentage	No. of persons	Percentage
Knowledge	28	93.3%	23	76.6%	22	73.3%	15	50%
Attitude	25	83.3%	24	80%	24	80%	20	66.6%
Practices	25	83.3%	22	73.3%	24	80%	23	76.6%

Based on the number of questions answered, grading was done as high, intermediate, low to evaluate the knowledge, attitude, practices of medical waste management by doctors, nurses, paramedical and housekeeping staff. Out of 30 Housekeeping or sanitary staff, most of them were intermediate and low grade,

whereas nurses and paramedical staff were high and intermediate grade. Out of 120 health care personnel 43 members possess high grade of practices, 42 and 41 members came under high grades of knowledge and attitude of biomedical waste management (Table No.3).

Table-3: Grading of KAP among health care personnel

	Doctors (n=30)	%	Nurses (n=30)	%	Paramedical staff (n=30)	%	Housekeeping staff (n=30)	%
Knowledge								
High	16	53.3	10	33.3	11	36.6	4	13.3
Intermediate	12	40	9	30	7	23.3	5	16.6
Low	2	6.6	4	13.3	4	13.3	6	20
Attitude								
High	16	53.3	10	33.3	11	36.6	5	16.6
Intermediate	7	23.3	11	36.6	9	30	8	26.6
Low	2	6.6	3	10	4	13.3	7	23.3
Practice								
High	14	46.6	12	40	12	40	5	16.6
Intermediate	8	26.6	7	23.3	9	30	13	43.3
Low	3	10	3	10	3	10	5	16.6

DISCUSSION

Bio Medical waste management is a major concern not only facing by hospitals, clinics, nursing homes, but also by environmental & law forcing agencies, media and public [8]. Segregation of Bio Medical Waste should be done by generator himself or herself. Housekeeping staff is the responsible for transportation, in house storage and handing over to common facilitator for disposal of waste.

Doctors and Nurses practices are low when compared to knowledge and attitude. Whereas, Paramedics and Housekeeping staff practices are better in practices than knowledge and attitude as per this study. In this study >80% of doctors, nurses and technicians were well aware about biomedical waste management and almost 60% of sweepers were answered satisfactorily. In similar to our study, Meenu Kalia *et al.* [9] reported from tertiary care hospital in Punjab, proper disposal of the sharps and infected waste awareness observed well among nurses and technicians

around >90%, whereas only 50% of sweepers answered satisfactorily.

In the present study, out of 30 Housekeeping or sanitary staff, most of them were intermediate and low grade, whereas nurses and paramedical staff were high and intermediate grade. Out of 120 health care personnel 43 (35.8%) members possess high grade of practices, 42 (35%) and 41 (34.1%) members came under high grades of knowledge and attitude of biomedical waste management. Overall, there is no much difference among different groups of healthcare personnel. Low knowledge noticed mainly in housekeeping staff and practices of medical waste management are decreased among nurses and doctors when compared to knowledge and attitude which may be due to busy work schedule.

Appropriate management of medical waste is important step to take forward in health care settings, as it also serves an indirect indicator of hospital acquired

infections [10]. Most of problems will face by health management if there is no proper handling and disposal of medical waste, or less awareness of safe disposal.

Shourya kanti Das *et al.* [10] reported nearly 30.8% of the subjects knew about BMW rules, where as Chudasama *et al.* [11] observed 51.4%. Awareness about BMW management reported by other studies, Sanjeev R *et al.* [12], Narang RS *et al.* [13], Kishore J *et al.* [14], Madhavi KV *et al.* [15], Basu M *et al.* [16] was 72%, 80%, 75%, 67.8%, and 94.4% respectively.

Proper guidelines should develop by every health care settings based on biomedical waste management rules formulated by Government of India. According to guidelines all health care personnel should follow the rules of segregation, handling, storage, transport. Using color coding bags appropriately is more important, as all the health care personnel are following color coding for storage & disposal of waste, mixing of waste creates a big problem for staff and also management for safe disposal.

CONCLUSION

Nurses and technicians should still improve their skills towards biomedical waste management. Awareness is not satisfactory among housekeeping staff due to lack of knowledge. Proper policies should be formulated according to hospital rules towards biomedical waste management by the support of health care personnel. To improve the practices and knowledge at all steps of health care delivery, need regular intensive training programmes to be conducted by administration. At the same time adequate resources to be provided to healthcare personnel to work efficiently.

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