

SHORT ARTICLE

**BIOMEDICAL WASTE MANAGEMENT IN A TERTIARY LEVEL HOSPITAL, IN
VISAKHAPATNAM**

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Introduction

‘Bio-medical wastes’ means any waste, which is generated during the diagnosis, treatment or immunisation of human beings or animals or in research activities pertaining thereto or in the production or testing of biologicals¹. A bio-medical waste (BMW) is any solid or liquid waste, which may present a threat of infection to humans. It is generated from healthcare establishments such as hospitals, blood banks, laboratories and research institutes, veterinary hospitals, etc¹. Indiscriminate disposal of BMW or hospital waste and exposure to such waste possess serious threat to environment and to human health (including the health care provider, waste handlers, the patients, and their visitors) and requires specific treatment and management prior to its final disposal. The severity is further compounded by the high prevalence of diseases like HIV and Hep B and C. Because of the concerns, the Union Ministry of Environment and Forest, Govt. of India, has notified “Bio-medical Waste (Management and Handling) Rules, 1998” amended on 2nd June 2000. These guidelines are issued by the Central Pollution Control Board (CPCB).

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These rules apply to all those who generate, collect, receive, store, transport, treat, dispose, or handle bio-medical waste in any form. However at many places, authorities are failing to install appropriate systems for a variety of reasons, such as non-availability of appropriate technologies, inadequate financial resources and absence of professional training on waste management. King George Hospital is a 1000 bedded tertiary level hospital in Visakhapatnam City, which serves not only the people from north coastal districts of Andhra Pradesh but also the bordering districts of Chattisgarh and Orissa. With increasing patient turn over, the waste management has become a challenge in itself in this hospital. However the authorities claim that periodical training regarding hospital waste disposal is being provided to the staff & private agencies are recruited for this purpose. The study aims to assess the awareness about the biomedical waste (BMW) management & universal work precautions (UWP) among the health care personnel and also observing & documenting the prevailing health care waste management system in King George hospital.

Material and methods

This is a cross sectional hospital based study conducted in a tertiary level hospital. The total staff including doctors, paramedical and class IV constitute approx 1300. All the departments in the hospital (clinical & Para clinical) including outpatient, inpatient, operation theatre, ICU and labour room, clinical lab, blood bank, radiology and nuclear medicine depts etc were visited by the investigators. Information was obtained by both interview and observation method. A total of 134 study subjects (constituting 10% of the staff) were selected randomly, which included doctors, nurses, lab technicians and class

IV, and were interviewed by administering a structured questionnaire. Data has been analyzed using MS Excel.

Observation and Discussion

A total of 134 subjects were interviewed which included doctors, paramedical and class IV category. Table I shows the various categories of health care personnel interviewed and those who have obtained training and their awareness on categories of waste generated, hazards, method of segregation and collection i.e. in color coded bins. It shows that only 8.5 % of doctors, 57.1% of the paramedical and 11 % of the class IV staff had obtained training sometime during their service. Although as claimed by the authorities, there is no periodical training for all the cadres. Professionals and paramedical staff had adequate awareness on type and hazards of waste, in contrast to only 53% of the class IV. However only 11% of the doctors, 32% of the paramedical and 25% of the class IV (mostly working in OT, Blood Bank and labour room) were able to tell about the methods/guidelines of segregation and collection of waste into colour coded bins. Display of charts was seen only in 3 wards.

Table I : Awareness on BMW management among health care providers

Health care personnel	Number	Trained	Awareness on methods			Precautions taken (%)
			type/categories of waste	Segregation/ collection	Treatment/ disposal	
Doctors	38	3(8.5%)	98%	11%	70%	100%
nurses/paramedical	56	32(57.1%)	84%	32%	48%	76%
Class IV	40	4(11%)	53%	25%	76%	20%

Regarding the practices, guidelines are not being followed adequately by any level of health care personnel. The waste in majority of the wards, OPD and clinical lab and other paramedical depts. are poorly managed. There is no defined method of segregation. There is mixing of all type of waste including sharps and garbage into one bin whichever is available, irrespective of the color. Similar findings are quoted by Hassan MM et al² in a study from Dhaka City and Bdour A et al³ in a study done in northern part of Jordan, where no specific regulations or guidelines for segregation or collection of these wastes are followed. Mohammad Arab et al⁴ in a case study in Tehran and S. Gupta et al⁵ from Balrampur hospital , Lucknow, revealed poor management of waste in wards except for a few and reported dumping of all types of waste in common bins. Regarding sharps, needle/hub cutters are not functioning in majority of the wards. Puncture proof needle container are used only in one third of the wards. There is no supervision on part of the doctors. It is observed in our study that 90% of the doctors including interns and postgraduates are not following the guidelines, which suggests no association between education and waste management, which is in contrast to the finding reported by Mohammad et al. The awareness on UWP was adequate among all the health care personnel, but only doctors and paramedical staff were following UWP, 80% of the class IV were not taking any precautionary measures. There are several observed problems in this process like lack of awareness & training, lack of supply of colour coded bins in the last 3 years resulting in indiscriminate use of only one or two coloured bin for all purposes, lack of supply of protective measures viz gloves, masks, aprons etc and lack of proper supervision. Above all, the attitude of the professionals for whom it is “not part of their job” is an important finding. One third of the staff especially professionals were not aware of how or where the waste from the hospital is ultimately treated and disposed.

According to the rest, the waste collected in bags is dumped at an open space inside the hospital premises and collected by a private agency of which they are not sure. Similar findings are quoted by Hanumantha Rao P⁶ in a study done in three states in India. The hospital does not have any treatment facility for infectious waste.

Conclusion

Safe handling of BMW continues to be a matter of serious concern for health authorities. BMW originating from hospitals continue to be dumped in open garbage bins on the roads. Color coding is not followed. Segregation, collection & storage of waste in isolated area are not satisfactory. Personal protective equipment and accessories are not provided and not used especially by the class IV. To improve the existing conditions it is recommended to constitute a Hospital Infection Control Committee (which is presently nonexistent) to supervise all the aspects of BMW. Periodical training to all the staff with focus on interns & postgraduates for segregation and collection and Class IV for collection and disposal. Hospital should install a waste treatment plant of its own or see that collection is done on day to day basis by pvt agency rather than dumping the waste in open space for long period of time.

References:

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