

TO STUDY THE AWARENESS OF HEALTH CARE PERSONNEL INVOLVED IN BIO-MEDICAL WASTE MANAGEMENT IN NEW GOVERNMENT GENERAL HOSPITAL AT VIJAYAWADA, ANDHRA PRADESHLalith Meesala¹, J. Shyam Sunder²**HOW TO CITE THIS ARTICLE:**

Lalith Meesala, J. Shyam Sunder. "To Study the Awareness of Health Care Personnel Involved in Bio-Medical Waste Management in New Government General Hospital at Vijayawada, Andhra Pradesh". Journal of Evolution of Medical and Dental Sciences 2014; Vol. 3, Issue 10, March 10; Page: 2492-2496, DOI: 10.14260/jemds/2014/2162

ABSTRACT: BACKGROUND: The recent developments in healthcare units are precisely made for the prevention and protection of community health. Sophisticated instruments have come into existence in various operations for disease treatment. Such improvement and advances in scientific knowledge has resulted in per capita per patient generation of wastes in health care units. Waste generated in the process of health care are composed of variety of wastes including hypodermic needles, scalpels, blades, surgical cotton, gloves, bandages, discarded medicine, body fluids, human tissues and organs, chemicals etc., other wastes generated in healthcare settings include radioactive wastes, mercury containing instruments, PVC plastics etc., so the awareness of personnel involved in the management of biomedical waste is important. **AIM:** To assess the waste handling and treatment system of hospital bio-medical solid waste and its mandatory compliance with regulatory notifications for bio-medical waste (BMW) management rules 1998, under Environment Protection Act (EPA) 1986, Ministry of Environment & Forest, Government of India at Government General Hospital (GGH), Vijayawada, Andhra Pradesh. **SETTINGS AND DESIGN:** This cross sectional study was conducted in GGH at Vijayawada, Andhra Pradesh. **MATERIAL AND METHODS:** 75 study subjects selected were personnel involved in management of hospital solid waste observed for one month and frequency tables, percentages, and proportions were used as statistical applications. **STATISTICAL ANALYSIS:** Analysis was done using MS – Excel software. **RESULTS AND CONCLUSIONS:** Out of gross total quantity of BMW generated in entire GGH, Vijayawada 74% of it is general waste. Knowledge levels regarding storage of BMW was more among class IV employees, were as awareness in differentiation of infectious and non-infectious waste was more among staff nurses.

KEYWORDS: Bio-medical waste management, GGH Vijayawada, EPA.

INTRODUCTION: The waste produced in the course of health care activities carries a higher potential for infection and injury than any other type of waste. Therefore, it is essential to have safe and reliable method for its handling. Inadequate and inappropriate handling of health care waste may have serious public health consequences and a significant impact on the environment. Appropriate management of health care waste is thus a crucial component of environmental health protection, and it should become an integral feature of health care services.¹

According to Bio-Medical Waste (Management and Handling) Rules, 1998 of India, "Bio-medical waste" is defined 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.¹

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Hospitals generate large volumes of wastes as a by-product of a variety of health services and procedures carried out such as surgery, dressing of the wounds, dialysis, deliveries, laboratory and dental procedures, postmortem procedures, etc. Such a waste may be infectious or non-infectious. If such a waste is not collected, transported and disposed of, it not only results in causation of “Hospital Acquired Infections” (Nosocomial infections) but also poses a major public health hazard by causing pollution of air, water and soil. Persons who are constantly exposed to these wastes especially waste-sharps, are hospital workers (nurses), rag pickers, cleaners, laundry staff, etc. who are always at a risk of getting fatal diseases like Hepatitis B and C and HIV through injuries by contaminated needles and sharps as an occupational hazard.

Indiscriminate dumping of the hospital wastes into the backyards or into open municipal pits, become breeding places for disease spreading mosquitoes, flies, rodents and microbes. Epidemics can result from the contamination of drinking water and food sources with these infectious wastes, which are washed by rains. Indiscriminate open burning of infectious waste, especially plastics will result in emission of noxious gases, which may produce cancer. Further, there is scope for (improper) re-use of syringes, needles, polythene bags, catheters and other rubber tubes, bottles, etc.²

The quantity of waste generated in a hospital would direct its waste management policy and is dependent upon the type of hospital and the health problems, health policies and practices followed and the nature of patient care provided in them. In India, from the data available from regional or local studies, it is presumed that most hospitals generate roughly up to 1 to 2 kg/bed/day of biomedical waste.

This quantity varies between Government and private health care establishments.³ About 75 to 90% of the waste produced by health care providers is non-hazardous “general waste” comparable to domestic waste.⁴ Non-contaminated waste becomes infected when it gets mixed with infected waste. Hence one should not allow mixing of infected waste with household (non-contaminated) waste. This is possible when waste is segregated or sorted into “Infected” and “Household” waste at the point of generation. Hence, this study is a small endeavor to know the awareness of personnel involved in BMW management in New GGH Vijayawada.

MATERIALS AND METHODS: This cross sectional study was carried out at new GGH (total number of beds in hospital – 460, wards – 33 and average number of beds per ward – 13 – 14) attached to Siddhartha Medical College, Vijayawada. This hospital caters to patients from Vijayawada and the surrounding areas, which includes Gannavaram, Kesarapalli, Tenali, Mangalagiri, Chinnakakani, Peddakakani, and Guntur. The BMW weighed using weighing method and data was collected during the period of 1st November 2013 to 30th November 2013. During the study period, all the 75 members (34 class IV employees, 29 staff nurses and 12 laboratory technicians) of personnel involved in BMW management at new GGH were interviewed with structured questionnaire. Doctors, undergraduates, postgraduates, pharmacists, cook and clerks were excluded from the study. Ethical approval was obtained from the Institutional Ethics Committee. The benefits, confidentiality, and voluntary participation features of the study were explained and informed consent was obtained from all the subjects.

RESULTS: Majority of study population belonged to the age group 25 to 45 years and were class IV employees (45%) and majority of the class IV were contractual employees and 60% of them have

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secondary level education, rest of them have primary education and few were illiterates. Among staff nurses and class IV employees' majority of them were females but among laboratory technicians majority of them were males. Amount of waste generated per bed was 2.76kgs/bed/day and about 74% of the waste generated in the hospital was general waste.

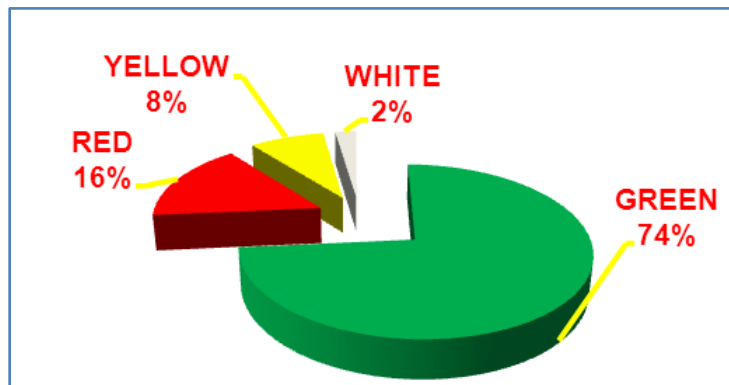


Fig. 1: Amount of waste generated

Green – general waste; red – plastics; yellow – infectious waste; white – sharps

Designation	Present No. (%)	Absent No. (%)	Total No. (%)
Class IV employees	33 (97.05)	1 (2.95)	34 (100)
Staff nurses	20 (68.96)	9 (31.04)	29(100)
Laboratory technicians	9 (75)	3 (25)	12(100)
Total	62(82.6)	13(17.4)	75(100)

Table no. 1: Knowledge about storage of BMW

Chi-square value (χ^2) = 6.958 (with Yates correction), degree of freedom (DF) = 2, p-value <0.05, Significant.

Significantly more number of class IV employees has knowledge about storage of BMW.

Designation	Yes No. (%)	No No. (%)	Total No. (%)
Class IV	12(35.2)	22 (64.8)	34 (100)
Staff nurses	24 (82.7)	5(17.3)	29 (100)
Laboratory technicians	7(58.3)	5(41.7)	12 (100)
Total	43 (57.3)	32 (42.7)	75(100)

Table no. 2: Knowledge about segregation of infectious & non-infectious waste

$X^2=12.567$ (with Yates correction) DF = 2, $p < 0.01$, significant

Significantly more number of staff nurses has knowledge about segregation of infectious and non-infectious waste.

Designation	Yes No. (%)	No No. (%)	Total No. (100)
Class IV	5(14.7)	29 (85.3)	34 (100)
Staff nurses	21(72.4)	8(27.6)	29 (100)
Laboratory technicians	7(58.3)	5(41.7)	12 (100)
Total	33 (44)	42 (56)	75(100)

Table no. 3: Vaccination with hepatitis-B

$\chi^2=19.55$ (with Yates), DF = 2, $p<0.001$ significant

Significantly more no. of staff nurses & laboratory technicians were vaccinated against Hepatitis-B.

Knowledge regarding disposal of BMW was more in staff nurses and practice of safety measures was more among laboratory technicians the above observations were not statistically significant. Segregation was not practiced at the point of generation, each ward was provided with color coded bins and these bins were labeled with biohazard symbol. Biomedical waste was collected 8th hourly in three shifts by local NGO (SAFENVIRON) and the infectious waste was not subjected to any treatment before disposal.

DISCUSSION: The study was conducted on predesigned and pretested questionnaire and a cross-sectional study design was selected as a similar design was adopted in other studies.⁵ Amount of waste generated per bed was 2.76 kgs/bed/day this is similar to that of Rao, HVN⁶. Knowledge about biomedical waste management rules among the like the, nurses, laboratory staff was high but was low among the class IV employees, this was similar to the findings from other studies.⁷ Knowledge about color coding of containers was good among study subjects but the segregation of infectious and non-infectious was not practiced at the point of segregation. The practice of reporting of injuries resulting from improperly disposed biomedical waste was found to be low among the staff nurses and laboratory technicians when compared to class IV employees and standards for liquid waste were not measured regularly. Stein et al.⁸ in their study reported that among nurses, only 37% reported that they ever suffered needle stick injury. Training of the personnel dealing with health care waste is critical for the proper and appropriate management.

CONCLUSIONS: Knowledge levels of class IV employees were low when compared to staff nurses and laboratory technicians and most of them were not practicing safety precautions while handling biomedical waste, therefore lack of proper and complete knowledge about biomedical waste management impacts practices of appropriate waste disposal.

RECOMMENDATIONS:

- In-service training programmes have to be organized to all the staff concerned with BMW management.
- Technical training for BMW management for nurses & paramedical personnel.
- Regular monitoring of parameters in the case of liquid waste for safe environmental protection.

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- Personnel involved in BMW management should be vaccinated against hepatitis-B, by conducting free camps, especially for class IV employees.
- Adequate & appropriate protective devices must be provided to the staff involved in BMW disposal in the hospital.

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