

## Original Article

### Management of Biomedical Waste: Knowledge and Awareness Lacunae

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#### ABSTRACT:

**Background:** Biomedical Waste is perilous leading to many infections and thus its management is obligatory. Health care waste, due to its content of hazardous substances, poses serious threats to personal and environmental health. Undergraduate students and interns hold a strong responsibility for better future and thus should be cognizant about safe waste disposal and isolation practices. The present study was undertaken to assess the knowledge and awareness about biomedical waste management in undergraduate students (final year) and interns. **Methods:** A self-administered questionnaire based on knowledge and awareness of bio-medical waste management policy and practice were given to a total of 100 students (50 final year undergraduate students and 50 interns). **Results:** Out of 100 undergraduate students and interns 68 were girls and 32 were boys. 43% knew correct definition of biomedical waste. 75% had correct knowledge about sources and definition of biomedical waste and 58% had knowledge of occupational hazards because of insufficient waste disposal. 42% were aware of immunization protocol and 43% about authorization principles of waste management. **Conclusions:** Information concerning the BMW management practices in the undergraduate and intern of institution was satisfactory. But, there is a need for meticulous training program for both undergraduates and interns as they hold the individual responsibility as health care professionals to maintain healthy self and surroundings. Constant monitoring and implementation of awareness programs is needed.

**Key words:** Biomedical waste, Hospital waste, waste management.

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#### INTRODUCTION

'Bio-medical waste' (BMW) means any solid and/or liquid waste including its container and any intermediate product, which is generated during the diagnosis, treatment or immunization of human beings or animals or in research pertaining thereto or in the production or testing thereof.<sup>1</sup>

Due to the increase in the procedures that are carried out at the various health care setups, excessive amounts of waste have been generated at the centers of care.<sup>2</sup> The waste produced in the course of healthcare activities carries a higher potential for infection and injury than any other type of waste. Inadequate and inappropriate knowledge of handling of healthcare waste may have serious health consequences and a significant impact on the environment as well. The safe disposal and subsequent destruction of medical waste is a key step in the reduction of illness or injury through contact with this potentially hazardous material, and in the prevention of environmental contamination.<sup>3</sup>

Interns, who are just at the start of their career after completing graduation are exposed to various hazards like blood and blood products, injections etc. in various settings while conducting surgery, collection of blood samples, immunization OPDs in the hospital. It is essential that they are fully aware of safe handling practices and related biomedical waste management. Even in their student life, they are exposed to similar hazards during their clinical postings in various subjects thus making them vulnerable to infections. Among all the health problems, the ones which are of major concern are hepatitis B, C and HIV/AIDS. According to WHO statistics, hepatitis virus can survive for 7-10 days in dry conditions. More than 8 million hepatitis B, over 2.3 million hepatitis C and, more than 8000 cases of HIV, are estimated to occur yearly from the reuse of syringe and needles without sterilization.<sup>4</sup>

The present study was undertaken to assess the awareness and knowledge amongst undergraduate and interns as they are new to the clinical vicinity and thus are at risk of

various hazards from improper biomedical waste management practices.

## MATERIALS AND METHOD

A total of 100 undergraduate students of final year and interns of both genders who were, present at the time of data collection and willing to participate in the study were assessed for knowledge and awareness regarding biomedical waste disposal. The structured questionnaire was constructed in two parts: i.e., demographic data and knowledge on biomedical waste management. The investigator was given written consent form the students. Then the investigator collected the data from the students by using structured questionnaire to assess their knowledge. Statistical analysis was done with SPSS. The data collected by questionnaire survey were coded and analyzed with simple descriptive statistics (mainly percentage).

## RESULTS

Out of 100 undergraduate students and interns 68 were girls and 32 were boys. 75% had correct knowledge about sources of generation of BMW and 58% had knowledge of occupational hazards because of insufficient waste disposal. 70% interns and 40 % final year students had knowledge of segregation of waste based on correct color coding. Both undergraduate and interns were lacking proper knowledge of immunization booster dosages and regarding the authorization of biomedical waste disposal. (Table1)

**Table 1:** Level of Awareness amongst undergraduate students and interns

CRITERIA	Undergraduate Students of Final Year (N=50)	INTERNSHIP STUDENTS (N=50)
Definition of biomedical waste and correct color coding	35(70%)	40(80%)
Occupational hazards	38(76%)	20(40%)
Immunization and the booster dosage charts	20(40%)	22(44%)
Authorization for waste disposal	10(20%)	33(66%)

## DISCUSSION

Improper management of waste generated in health care facilities causes a direct health impact on the community, the health care workers and on the environment. The waste generated in institutions essentially consists of solids and liquid, which may be hazardous, infectious and non-infectious. It has been estimated that up to 85% to 90% of the waste generated in hospitals is non-infectious (free with any body fluids, which is similar to domestic waste). Remaining 10% to 20% of waste that is of concern because

it is hazardous and infectious. In addition, waste that is un-segregated and not treated in the right manner would cause environmental pollution affecting the health of the community.<sup>5</sup>

It is estimated that 10-25% of health care waste is hazardous, with the potential for creating a variety of health problems. Bio-medical waste (BMW) collection and proper disposal has become a significant concern for both the medical and the general community. Since the implementation of the Biomedical Waste Management and Handling Rules (1998), every concerned health personnel is expected to have proper knowledge, practice, and capacity to guide others for waste collection and management, and proper handling techniques.<sup>6</sup>

The present study reveals that knowledge about the Biomedical waste management practices in the undergraduate and interns of institution were satisfactory which may be due to subject is included in curricula of Dental education and periodic awareness workshops and lectures in the institution for the intern and other different health professional team and motivate them to comply with the rules and guidelines regarding biomedical waste management. Knowledge about biomedical waste management rule among the interns were satisfactory which was similar in the studies.<sup>7,8</sup> Another study revealed that the dentists need to be educated on Biomedical Waste Management Rules, 1998 through extensive training program.<sup>9</sup> This is very surprising since it is in contrast to the study done by Kanchi in which 86% of the participants had knowledge of the color coding. However study done by Deo et al., reported poor knowledge among the medical staff (20%) but 88.2% of the interns answered correctly about disinfection before disposal.<sup>10</sup>

Our study mainly points towards the lacunae in knowledge of the students regarding mandatory immunization regime and the authorization policy of the biomedical waste management which would be essential for both government and private practice for them at an individual level in future.

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