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Original ARTICLE

Assessment of awareness of undergraduates about biomedical waste management

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ABSTRACT:

Background: Every institution has guidelines and protocol for management of biomedical waste. These guidelines and protocols should strictly be followed at every level of generation, collection, transportation, storage, treatment, and disposal. Hence; under the light of above mentioned data, the present study was conducted with the aim of assessing the awareness of undergraduates about biomedical waste management. **Materials & Methods:** A total of 150 undergraduate interns were enrolled in the present study. Complete demographic and clinical details of all the participants were obtained. A questionnaire made consisting of 25 questions with aim of assessing the awareness of participants about different biomedical waste management protocol. Correct answered was given 4 marks while no negative marking was done for wrong answers. Based on the results, mean and SD was calculated and assessment of awareness of undergraduates was done. Also, awareness was assessed among participants divided on the basis of gender. **Results:** Mean overall awareness score of all the candidates was 78.67. Mean awareness score among males was 82.13 and mean awareness score among females was found to be 75.2. However; while comparing the mean awareness score among males and females, non-significant results were obtained. **Conclusion:** Undergraduates are not fully aware of the biomedical waste management protocols.

Key words: Biomedical waste, Undergraduates

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INTRODUCTION

Health care waste also termed biomedical waste contains infectious, contaminated and hazardous waste like discarded sharps, non-sharps, blood, body parts, toxic chemicals, pharmaceuticals, medical devices and radioactive substances. If not managed properly, it carries a substantial risk to the hospital staff, the patients, the community, public health and environment.¹⁻³ The process of health care waste management (HCWM) involves challenging issues like collection and segregation, timely removal and safe disposal, illegal scavenging, patient safety, occupational safety and environmental safety.⁴ Every institution has guidelines and protocol for management of biomedical waste. These guidelines and protocols should strictly be followed at every level of generation, collection, transportation, storage, treatment, and disposal. At the level of generation itself, biomedical waste should be segregated into color-coded bags or containers. A proper mechanism should be

developed to collect, transport, store, or dispose such hazardous waste to avoid serious public health consequences. All those involved in different levels from generation to disposal are potentially at risk of serious health consequences. The risk group includes doctors, nurses, auxiliaries, hospital staffs, and workers handling and disposing such waste.⁵⁻⁷ With the notification of the biomedical waste (BMW) rules, hospital waste management has been brought into focus in India. According to the rules, it is mandatory for the health care establishments to segregate, disinfect, and dispose their waste in an eco-friendly manner. Even though there is increased global awareness among health care professionals about threats and also suitable management techniques, in India, the level of awareness has been found to be unsatisfactory.⁸⁻¹⁰ Hence; under the light of above mentioned data, the present study was conducted with the aim of assessing the awareness of undergraduates about biomedical waste management.

MATERIALS & METHODS

The present study was planned for assessing the awareness of undergraduates about biomedical waste management. Ethical approval was obtained from institutional ethical committee and written consent was obtained from all the participants after explaining in detail the entire research protocol. A total of 150 undergraduate interns were enrolled in the present study. Complete demographic and clinical details of all the participants were obtained. A questionnaire made consisting of 25 questions with aim of assessing the awareness of participants about different biomedical waste management protocol. Correct answered was given 4 marks while no negative marking was done for wrong answers. Based on the results, mean and SD was calculated and assessment of awareness of undergraduates was done. Also, awareness was assessed among participants divided on the basis of gender. All the results were recorded in Microsoft excel sheet and were analyzed by SPSS software. Man-Whitney U test was used for evaluation of level of significance.

RESULTS

In the present study, a total of 150 undergraduate interns were enrolled. Mean age of the interns was found to be 24.5 years. Out of 150 undergraduates, 75 were males while the remaining were females. In the present study, out of total 100 score, mean score of all the candidates was 78.67.

Table 1: Demographic data

Parameter	Number	
Mean age (years)	24.5	
Gender	Males	75
	Females	75

Table 2: Awareness score

Variable	Mean Awareness score	SD	p- value
Males	82.13	12.52	0.15
Females	75.2	10.33	
Overall	78.67	11.74	

In the present study, mean awareness score among males was 82.13 and mean awareness score among females was found to be 75.2. However; while comparing the mean awareness score among males and females, non-significant results were obtained.

DISCUSSION

A major issue related to current biomedical waste management in many hospitals is that the implementation of biowaste regulation is unsatisfactory. Alarmingly, most of the produced biomedical waste is either incinerated or dumped in landfills or let off in the nearest water body untreated. Improper waste disposal has led to numerous health hazards such as injuries from sharps, development of nosocomial infections in patients particularly human immunodeficiency virus (HIV), Hepatitis B and C, and emergence of resistant strains of microorganisms.⁸⁻¹⁰ Hence; under the light of above mentioned data, the present study was conducted with the aim of assessing the awareness of undergraduates about biomedical waste management.

In the present study, a total of 150 undergraduate interns were enrolled. Mean age of the interns was found to be 24.5 years. Out of 150 undergraduates, 75 were males while the remaining were females. In the present study, out of total 100 score, mean score of all the candidates was 78.67. Jahnavi G surveyed a total of 463 undergraduate students (216 males & 247 females) of ASRAM medical college of Andhra Pradesh surveyed regarding awareness about biomedical waste management. Most of the students have heard about biomedical waste. Some of them were aware that it causes health hazards. But knowledge about category of wastes, duration of waste storage, responsibility of waste, type of bags used for collection, identification of Biohazard symbol was poor. Awareness of Biomedical waste management and Handling rule 1998 was also poor. There were gaps in various aspects of biomedical waste management among medical students. Appropriate training or inclusion of a topic in undergraduate medical curriculum can fulfill this.¹⁰ Sharma A et al determined the following among the workforce of the Jaipur Dental College, India: their awareness regarding biomedical (BM) waste management policy and practices, their attitude towards biomedical waste management, and their awareness regarding needle-stick injury and its prevalence among different categories of health care providers. A cross-sectional study was conducted using a questionnaire with closed-ended questions. It was distributed to 144 dentists, nurses, laboratory technicians and Class IV employees (cleaners and maintenance personnel) at Jaipur Dental College. The questionnaire was used to assess their knowledge of biomedical medical waste disposal. The resulting answers were graded and the percentage of correct and incorrect answers for each question from all the participants was obtained. Of the 144 questionnaires, 140 were returned and the answers graded. The results showed that there was a poor level of knowledge and awareness of biomedical waste generation hazards, legislation and management among health care personnel. It was surprising that 36% of the nurses had an extremely poor knowledge of biomedical waste generation and legislation and just 15% of the Class IV employees had an excellent awareness of biomedical waste management practice. It was concluded from the that there are poor levels of knowledge and awareness about BM waste generation hazards, legislation and management among health care personnel in Jaipur Dental College. Regular monitoring and training are required at all levels.¹¹

In the present study, mean awareness score among males was 82.13 and mean awareness score among females was found to be 75.2. However; while comparing the mean awareness score among males and females, non-significant results were obtained. Joshi SC et al explored perceptions of staff of an Indian rural tertiary care teaching hospital on hospital waste management. A qualitative study was conducted using 10 focus group discussions (FGDs), with different professional groups, cleaning staff, nurses, medical students, doctors and administrators. The FGD guide included the following topics: (i) role of Health Care Waste Management (HCWM) in prevention of health care associated infections, (ii) awareness of and views about HCWM-related guidelines/legislation, (iii) current HCWM practices, (iv) perception and preparedness related to improvements of the current practices, and (v) proper implementation of the available guidelines/legislation. The FGDs were recorded, transcribed verbatim, translated to English (when conducted in Hindi) and analysed using content analysis. Two themes were identified:

Theme (A), 'Challenges in integration of HCWM in organizational practice,' with the categories (I) Awareness and views about HCWM, (II) Organizational practices regarding HCWM, and (III) Challenges in Implementation of HCWM; and Theme (B), 'Interventions to improve HCWM,' with three categories, (I) Educational and motivational interventions, (II) Organizational culture change, and (III) Policy-related interventions. A gap between knowledge and actual practice regarding HCWM was highlighted in the perception of the hospital staff.¹²

CONCLUSION

From the above results, the authors concluded that undergraduates are not fully aware of the biomedical waste management protocols. Hence; proper orientation of undergraduates is required for increasing their knowledge about the management protocols of biomedical waste. However; further studies are recommended.

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