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AWARENESS ON BIOMEDICAL WASTE MANAGEMENT (BMW) AMONG UNDERGRADUATE MEDICAL STUDENTS OF PUNJAB

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ABSTRACT

Biomedical waste (BMW) collection and proper disposal have become a significant concern for both the medical and the general community. Today, about one fourth of biomedical waste is considered as hazardous and may affect the health of both medical personnel and general community. Medical students as future professionals are soon going to be an integral part of health care system. They should have proper and sufficient knowledge on BMW management. Moreover, the awareness about various aspects of BMW management has to be assessed frequently too. Hence, this study was undertaken to assess the existing awareness and knowledge about BMW management among students of a medical college in Punjab to identify the gaps and to take necessary steps for rectification. An observational descriptive study was done on 110 students of second professional year at a medical college in Punjab by administering a pre-designed questionnaire. The data was analyzed using software SPSS 16 version. 73.6% of the students were not aware of BMW legislation. A perusal of results revealed that 47.2% medical students did not have adequate knowledge regarding handling and safe disposal of BMW. Majority had deficient knowledge and awareness regarding categories of BMW (71.8%) and its disposal in colour bags (60.9%). This study presses upon the need for generating awareness about safe handling and disposal of biomedical waste among medical students by organizing campaigns and conducting special classes to improve the knowledge for future practical application.

KEY WORDS: Biomedical waste, awareness, undergraduate, medical.

INTRODUCTION

Bio-medical waste (BMW) refers to the waste generated during the diagnosis, treatment or immunization of human beings or animals or in the research activities pertaining thereto or in the production or testing of biologicals and including categories viz. general waste, pathological waste, radioactive waste, chemical waste, infectious waste, sharps, pharmaceutical waste, pressurized containers.[2] BMW is forming approximately 1%–2% of the total municipal solid waste stream.[1] Inappropriate treatment and disposal of waste can transmit diseases.[2] In India, Legal provisions (BMW [management and handling] Rules 1998)[3] exist to mitigate the impact of hazardous and infectious hospital waste on the community. However, these provisions are yet to be fully implemented. However, owing to the absence of proper waste management, improper awareness about the health hazards from BMWs, dearth of financial and human resources, and inadequate methods of waste disposal biomedical waste management has become a problem to reckon with. The hazardous impact of medical waste on the public and environment is greatly enhanced if adequate and appropriate handling of these wastes is not adopted.[4] Hence, bio-medical waste collection and proper disposal have become a significant concern for both the medical and the general community.[5, 6]

A perusal of earlier studies conducted on awareness of BMW in various states of India reveal that the awareness among health professionals about the hazards and its appropriate management techniques are unsatisfactory.[4,9,10] This study was therefore, conducted to understand the awareness amongst the students enrolled in a medical college of Punjab as regards to BMW management practices to study their Knowledge, Attitude and Practice.

MATERIALS AND METHODS

A cross-sectional study was designed and conducted during the period of November 2015. Participants were 110 students of second Prof. of a Medical College, Punjab. The study was conducted in the institution after getting approval from Institutional Ethical Committee. The subjects was enrolled after written informed consent in our study A pretested, predesigned questionnaire was given to the participants during their regular class hours after explaining the purpose of the study. Questionnaire contains questions regarding general information, handling, disposal and health hazards of biomedical

waste. Questionnaires were collected anonymously after completion from the participants. Responses to the questionnaire were entered into Excel Sheet. Later data was analyzed using spss16 version. Institutional ethical approval is taken for the study.

RESULT AND DISCUSSION

A total of 110 students participated in present study. The study participants included age range of 20-22 years.

Awareness about bio medical waste management and other particulars related to BMW act, handling and management are presented in table 1. It included details of categories of BMW, any health hazard, transmission of disease by BMW, received any training for BMW, knowledge about color coding of BMW management bags, identification of the correct color of bag for different categories.

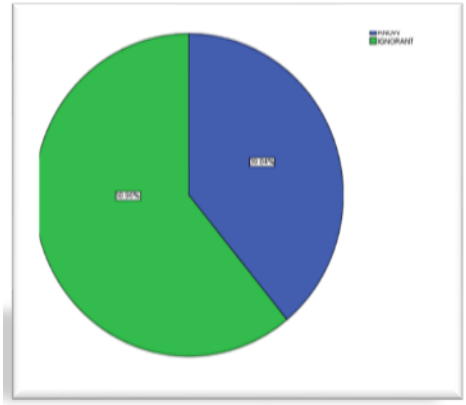

Figure 1.1.Knowledge about use of colour bags

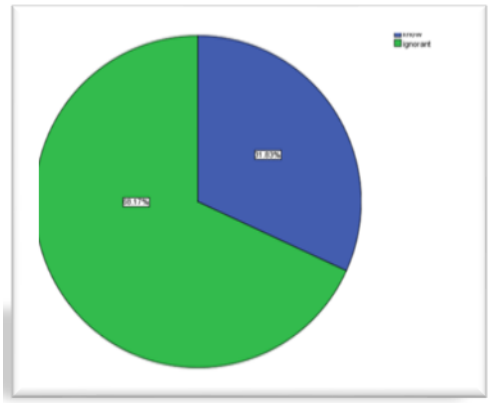

Fig 2.Awareness about Biohazard Symbols

A perusal of Table 1 discloses that 73.6% of the students were not aware of BMW legislation. 47.2% medical students did not have adequate knowledge regarding handling and safe disposal of BMW. Majority had deficient knowledge and awareness regarding categories of BMW (71.8%) and 60.9% of the students were unaware of disposal of BMW in colour bags (figure 1.1) 68.1 % of the students were ignorant of biohazard symbol (figure 1.2).

Table 1: Awareness about Bio Medical Waste Management Act, Handling and Management

Awareness	Yes No. (%)	No No. (%)
Know the definition of Bio Medical Waste (BMW)	105 (95.4)	05 (4.5)
Aware of BMW Rule/Act, 1998	29(26.3)	81 (73.6)
Received any training for BMW management	02 (1.81)	108 (98.1)
Aware of the fact that the institution generates BMW	108 (98.1)	02 (1.8)
Know about Bio Hazard Symbol	35 (31.8)	75 (68.1)
Know all (10) BMW management categories	31 (28.1)	79 (71.8)
Aware of any BMW management disposal policy in present hospital	44 (40.0)	66 (60.0)
Know about health hazards associated with BMW	107 (97.2)	03 (2.7)
Know that inappropriate BMW transmits diseases	98 (89.0)	12 (11.0)
Identified all coloured bags used for BMW collection	43 (39.0)	67 (60.9)
Regular educational program/training needed for BMW	93 (84.5)	17 (15.4)
Any guideline provided for colour coding at work area	48 (43.6)	62 (56.3)
Knowledge of coloured bags used to dispose BMW	53 (48.1)	57 (51.8)
Knowledge of commonly used chemical disinfectants	39(35.4)	71(64.5)
Identified methods for BMW management	23 (20.9)	87 (79.0)
Safe management of bio-medical waste is very important	108 (98.1)	02(1.8)
Waste management is a team work	83 (75.4)	27(24.5)
Considering Waste management as a part of duty	84 (76.3)	26(23.6)
Willingness for attending training programmes on biomedical waste management	93 (84.5)	17 15.4)

(Figure in parenthesis indicate percentage)

Table 2: Awareness about diseases transmitted by BMW

Disease	Yes No.(%)	No No.(%)
HIV	102 (92.7%)	8 (7.2%
Hep-B	104 (94.5%)	6 (5.4 %)
Hep-C	60 (54.5%)	50 (45.4 %)
TB	28 (25.4%)	82 (74.5%)
Tetanus	45 (40.9%)	65 (59.0 %)
Syphilis	38 (34.5%)	72 (65.4 %)
Leprosy	46 (41.8%)	64 (58.1 %)
Others	42 (38.18%)	68 (61.8 %)

(Figure in parenthesis indicate percentage)

Table-2 reveals the awareness regarding infectious diseases transmitted by improper handling of BMW. 92.7% and 94.5% of students were aware of HIV and Hep-B respectively as the infectious diseases which can be transmitted by improper handling of BMW. In a similar study among medical students at Vizianagaram[7], it was found that 78.87% and 58.91% of students responded for HIV and Hep-B respectively. Our findings also corroborate with the study reported w.r.t medical students of a tertiary hospital at Tirupati[8],. As depicted in Table 1, 64.5% of the students did not know about the commonly used chemical disinfectants like hypo & bleaching powder

Though majority of the participants had heard about the BMW and its management rule, less than 2% of the study participants had actually received training for BMW management. Only 28.1% study participants knew correct categories of BMW. The overall knowledge of study participants was not good indicating that they need good quality training to improve their current knowledge about BMW. Emphasis should be given to good quality training to the MBBS students at regular time interval.

CONCLUSION

Based on the observation, the importance of training the medical students regarding bio medical waste management is emphasized. Frequent awareness campaigns and classes may be conducted to improve the knowledge about safe handling and disposal of bio medical waste among medical students for future practical application. Level of Awareness & Knowledge regarding BMW management has to be assessed regularly and periodically among the medical students. Subsequently any deficit pertaining to the knowledge about handling of BMW must be imparted as and when required. Concerned institutional authorities must make compulsory instruction that every medical student should get HBV and TT (every 5 years) vaccination at least at the time of entry into clinical postings.

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