



KNOWLEDGE, ATTITUDE AND PRACTICES ABOUT BIO-MEDICAL WASTE DISPOSAL AMONG NURSING STUDENTS IN A TERTIARY CARE HOSPITAL, JALAUN, UTTAR PRADESH

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ABSTRACT

Background: Biomedical waste is defined as waste generated during diagnosis, treatment, or immunization of human beings or animals, or in research activities pertaining thereto, or in production and testing of biological and is contaminated with human fluids. Biomedical waste is of global subject today. Inadequate and insufficient knowledge, attitude, and practices about biomedical waste disposal have excessive potential for injury and contamination to self in addition to others and can additionally have severe environmental consequences. **Objective:** To assess the knowledge, attitude and practices regarding biomedical waste disposal among nursing students. **Methodology:** The hospital based cross sectional study was carried out at Tertiary Care Hospital, Jalaun, Uttar Pradesh. Nursing students irrespective of gender of age group 18 to 24 years were taken. The consent of students was taken to include in the sample. The sample composed of 120 students. The study period was from 15 June to 15 July. **Results:** During this survey, 120 students participated. The majority being female (70.83%) and male (29.17%) studying in B.Sc.nursing. data indicates that 70.83% of student nurses were aware of the BMW management/handling regulation. Furthermore, 76.67% of students correctly recognized the biohazard symbol. It is concerning to observe that 73.33% of students were aware that 10-25% of hospital waste is classified as infectious. A total of 41.67% of student nurses reported that there is a lack of adequate storage facilities for collecting BMW vehicles at their location. **Conclusion:** Although nursing student's attitudes and patterns of practice were good but they had an unsatisfactory level of knowledge. Regular teaching and training of nursing students in biomedical waste disposal is recommended.

KEYWORDS : knowledge, attitude, practices, biomedical waste, nursing students.

INTRODUCTION

Biomedical waste refers to the waste that is produced during various medical procedures, such as diagnosis, treatment, immunization, and research activities related to these fields. It also includes waste generated during the production and testing of biological materials, which may be contaminated with human fluids.⁽¹⁾

Today, biomedical waste is a global issue that demands attention. The lack of knowledge, disregard for proper procedures, and careless handling of biological waste pose a significant threat to personal safety, public health, and the environment.

The exponential rise in population and the corresponding surge in demand for healthcare have enormously expanded the number of healthcare facilities.⁽²⁾ Paradoxically, hospitals, which serve as hubs for medical care and treatment, also pose a risk to the health and safety of patients by producing a substantial quantity of biomedical waste⁽³⁾.

Today, biomedical waste is a worldwide concern. In sufficient understanding, attitude, and behaviors of biological waste management provide a significant risk of damage and contamination to both oneself and others, and can also result in serious environmental repercussions.^(4,5) Substantial evidence exists to demonstrate the transmission of life-threatening infections, including HIV/AIDS, Hepatitis B, and C, through inadequate treatment of biomedical waste.⁽⁶⁾

It is not only a legal requirement, but also a social obligation to ensure the safe and effective management of refuse.⁽⁷⁾ The lack of sufficient and suitable understanding in managing healthcare waste might result insignificant health implications. Implementing an efficient communication plan is crucial, considering the limited knowledge among various staff groups at healthcare facilities on the management of biomedical waste.⁽⁸⁾

Aims And Objectives

Therefore, the present study was conducted to assess the level of knowledge and practice among staff nurses and nursing students with the following

1. To assess the knowledge regarding hospital waste management among nurses in tertiary care hospital, jalaun.
2. To know their actual mode of practice in managing the disposal of hospital waste in tertiary care hospital, jalaun.

MATERIAL AND METHODS

The study was conducted at tertiary care hospital, jalaun. The institute is a tertiary care centre catering almost entire state and bordering districts of neighbouring states. The study was conducted from 15 June to 15 July.

It was a descriptive, hospital based, cross-sectional study. A total of 120 student nurses participated in the present study. The participants were explained about the objective of the study. 10 students out of 130 students are not given consent to use the data. A pre-designed, pre-tested, structured proforma was used for data collection from all the study participants after getting their informed consent and confidentiality was assured. Study proforma contains.

2 set of questions concerning the knowledge and practice on the subject. Each correct question scores one mark. Self-made scoring system was used to categorize the participants as having good, average and poor scores.

Knowledge and practice scoring of nurses			
Serial no.	Scoring	Correct answers	Total 8 correct answers
1	Poor	<3	
2	Average	3-5	
3	Good	6-8	

Table-1 Knowledge About Bmw and Its Management Among Nurses (n= 120)

Questions	Student nurses (n= 120) Number (%)
1.Existence of BMW management & handling rule, 1998	85(70.83%)
2.Know different categories of waste	78(65.00%)
3.Recognize biohazard symbol	92(76.67%)
4.Proportion of hospital waste that are hazardous	88(73.33%)
5.Know components of colour coded containers	90(75.00%)
6.Correct segregation of all colour coded containers	86(71.67%)
7.Diseases transmitted by BMW, if not properly managed	94(78.33%)
8.Received any training on BMW management	24(20.00%)

Table-2 Practice Assessment Regarding Bio-medical waste (n= 120)

Questions	Student nurses (n= 120) Number (%)
1.Maintaining BMW records at worksite	52(43.33%)
2.Segregation of BMW done	60(50.00%)
3.Disinfection of BMW done before Disposal at worksite	58(48.33%)
4.Using personal protective measures while Handling BMW	72(60.00%)
5.Proper storage facility	50(41.67%)
6.Provided with hubcutters for needles and syringes	32(26.67%)
7.Any record available for injuries related to BMW	22(18.33%)
8.Know the place where BMW treated	24(20.00%)

Table-3 Demographic Characteristics Of The Study Population (n= 120)

Demographic Parameter	Number (%)
Type Of Residence	
Rural	74(61.67)
Urban	46(38.33)
Sex	
Male	35(29.17)
Female	85(70.83)
Religion	
Hindu	88(73.33)
Muslim	13(10.83)
Christian	11(9.17)
Others	8(6.67)
Socio economic status	
I	73(60.88)
II	18(15)
III	12(10)
IV	8(6.66)
V	9(7.5)

RESULTS

This study was conducted among nursing students of a tertiary care hospital, Jalaun regarding the knowledge and practices on hospital waste management. Nurses are the backbone of hospital management. The data presented in (Table 1) indicates that 70.83% of student nurses were aware of the BMW management/handling regulation. Furthermore, 76.67% of students correctly recognized the biohazard symbol. It is concerning to observe that 73.33% of students were aware that 10-25% of hospital waste is classified as infectious. With regards to the constituents of colour-coded containers, pupils demonstrated a higher level of understanding, namely 75%. According to the data, 78.33% of student nurses were aware of the diseases carried by BMW if

they were not effectively controlled. Merely 20% of students reported being sensitized or instructed on hospital waste management during their academic tenure.

Analysis of practice assessment (Table 2) revealed that a mere 43.33% of students engaged in this activity. An overwhelming majority of 60% of student nurses use personal protective precautions while handling BMW. A total of 41.67% of student nurses reported that there is a lack of adequate storage facilities for collecting BMW vehicles at their location. A notable finding was that 18.33% of student nurses had documented instances of injuries specifically associated with BMW. Slightly less than 20% of students were aware of the location where BMW operates. (Table 3) shows demographic variable of the study population associated with BMW management, the maximum participants were from (73.33%) Hindu religion, female (70.83%) are more in numbers than male participants are more from rural area (61.67%) of residence.

CONCLUSION

This study aimed to assess the knowledge, attitudes, and practices regarding biomedical waste disposal among nursing students in a tertiary care hospital. The bulk of nursing students exhibited an enthusiastic attitude towards the disposal of biological waste, acknowledging its crucial function in the control of infections and the promotion of sustainability. Nevertheless, the disparities between attitudes and actual practices emphasize the necessity for further training and strengthening of disposal protocols. These findings emphasize the need of continuous educational initiatives and hands-on workshops to close these disparities, guaranteeing that theoretical knowledge is successfully applied in reality.

DISCUSSION

According to the findings of this research, there is an immediate need for nursing students attending tertiary care facilities to receive additional education and training on the management of biomedical waste (BMW). Despite the fact that a significant proportion of students demonstrated a understanding of BMW rules and the potential dangers to their health, there were obvious inconsistencies in practice. These findings are in agreement with the observations that Sengoda and Amruth (2014) made. They pointed out that although while paramedical students working in tertiary care settings demonstrated an awareness of BMW management, there were still inconsistencies in the actual use of safe disposal techniques (2).

Based on the results, it is clear that comprehensive training courses are required immediately. According to the findings of a study conducted by Haider et al. (2015) on nursing students and staff nurses, inadequate training has a direct impact on the techniques of waste disposal, which result in the creation of potential risks of infection and damage to the environment (3). In addition, the management of BMW has a number of systemic issues, some of which include deficiencies in record-keeping, the use of personal protective equipment (PPE), and proper disposal processes.

According to Dey and Das (2020), the lack of administrative enforcement and continual monitoring leads to a conformity with BMW regulations that is frequently less than perfect and frequently falls short of ideal. The problem is made even more difficult by the limited access to facilities that are suitable for disposal and storage of waste.

Investigations conducted by Misra and Pandey (2005) shed light on the ways in which inadequate disposal facilities and insufficient waste separation contribute to increased health risks and environmental damage (5). Along the same lines,

Chudasama et al. (2013) emphasized the importance of having stringent regulations and the active participation of medical professionals in order to assure that BMW operations are in accordance with legal standards (6).

A concerning finding emerges from the current survey: only twenty percent of respondent expressed that they had received official BMW management training. According to research such a that which was carried out by Mathuret al.(2011),who emphasized the necessity of consistent training courses to encourage understanding and suitable waste handling practices (7), this conclusion is consistent with the findings of the research The results of the present study, whereby only 50% of students claimed to practice appropriate segregation of BMW, imply the need of infrastructure enhancements inside medical facilities.

These findings point to the need of a more organized and consistent strategy to teaching an monitoring BMW management processes generally. Using interactive seminars, refresher courses, and required compliance checks can help to improve adherence to safe BMW guidelines. The research results coincide with earlier studies, therefore supporting the case that a multifarious approach including institutional assistance, practice monitoring, and education is essential for reducing the hazards related with inappropriate BMW disposal.

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Ethical Approval: The Institutional Ethical Committee of Government Medical College Jalaun has granted approval for the study protocol.

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