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A Knowledge Attitude Practices on Biomedical Waste Management Among Nursing Students: A Cross Sectional Study

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ABSTRACT
Biomedical waste (BMW) management means to reduce waste generated from healthcare facilities and effectively segregate, collect, transport and dispose it in such a way that it is no more hazardous to HCW (healthcare workers), community or the environment. Lack of awareness and inadequate knowledge about BMW management can have serious consequences. Assess and compare the Knowledge, attitude, practices (KAP) of BMW management among medical and nursing students. A cross sectional study was done at a tertiary care teaching hospital among medical and nursing students. A self-administered, predesigned, pretested questionnaire was given to140 participants and data analysed by using Statistical Package for the Social Sciences version 21. Majority (80%) of the medical students were aware of the BMW rules whereas only 40% of the nursing students were aware of these rules. There was a statistically significant difference in the knowledge about various aspects of BMW management between the two groups of students. The students had an overall positive attitude towards BMW management but the difference was not significant between the groups. Practices of students regarding BMW management were relatively poor. BMW management rules should be strictly implemented at all levels to convert knowledge into good practises. Appropriate training programs should be designed for the undergraduate medical and nursing students focussing on BMW management practises.

INTRODUCTION

Bio Medical Waste as per Biomedical Waste (Management and Handling) rules 1998 means the waste, which is created during the course of diagnosis, treatment or even during immunization of human beings or animals, or in research activities pertaining there to or in the production or testing of biological[1]. Bio Medical Waste Management includes segregation, storage, transportation, treatment, disposal and retrieving reusable materials from the BMW so that it is no more hazardous to HCW (healthcare workers), community or the environment[2,3]. Globally the awareness about BMW handling and disposal is high but workers in India have been reported suboptimal awareness level about BMW handling and disposal[4]. According to the reports, it is alarming that almost 80% of medical wastes are put with general waste, in developing countries[5]. Suboptimal awareness and knowledge about biomedical waste management leads to serious health consequences for us and animals and also on the surrounding environment[8,7,6,5]. The practices that Health workers learn in the start of their careers become habits which later become difficult to change[10,9]. Nursing students form the backbone of healthcare system in the future. Considering this Biomedical waste handling is taught in the nursing curriculum. Deficiency in the knowledge, attitude and practice of proper BMW handling by the nursing students should be identified in every teaching hospital. Accordingly the training strategies for the nursing students can be planned to improve compliance and effective biomedical waste management in India[11]. With this background, present study was conducted with the aim to assess and compare the Knowledge, attitude, practices of BMW management among nursing students.

MATERIALS AND METHODS

Study Design: Cross sectional study was undertaken.

Study Area: study was conducted at the Institute of Nursing Education Bambolim Goa Study.

Participants: Final year nursing students of Institute of Nursing Education Bambolim Goa. Study instrument-Self-administered Questionnaire was used as tool to assess the knowledge, attitude and practices.

Statistical Analysis: Data was entered in Excel sheet and analyzed using SPSS software. Percentages were calculated.

RESULTS AND DISCUSSIONS

A total of 100 nursing students participated in the study. Mean age of participants was 20.54+2.50 years with the majority being female (70.6%) and studying in B.S. nursing (68%). (Table 1) shows 80% of students were aware about biomedical waste legislation. 70% were aware of who regulates the waste generated at health care facilities. Only 45% knew what is biomedical waste. 74% knew to what duration the biomedical waste can be stored. 68% were of opinion that separate permit is required to transport the biomedical waste. (Table 2) shows 74% of behavior that safe management of biomedical waste is a important issue. 84% of behaviour that waste management is a team work. 80% of behaviour that waste management is not an extra burden on the work. 90% wanted the institution to conduct CME periodically. 73% were willing to attend the programme which enhance their knowledge aboutbio medical waste. 96% of behaviour that labelling of container before filling it with waste is important. (Table 3) shows 80% of students were following the color code for biomedical waste management. 76% followed correct way of disposing sharp object. 68% followed correct colour code for biomedical waste to be autoclaved. Only 30% followed correct way of disposing the discarded drugs. Only 30% knew the steps to be followed after exposure to infected material. 68% followed correct way of discarding human anatomical waste.

Level of Knowledge About Needle Sticks Injuries:

- 95% of students had concern about needle stick injury.
- 45% of students did not recap the used needle.
- 91% of students discarded 'used needle' immediately.
- 7% of students had needle stick injuries. The cause was admitted as carelessness.
- 55% of students had taken protective immunization against Hepatitis B.

Proper knowledge, attitude, and good practice are very important for proper biomedical wastes handling. This study was conducted to check the knowledge regarding recent amendments in biomedical waste management rules, 2016 among nursing students which was good and reflected positive attitudes and good practice patterns but required little improvement. Nursing students in future are the backbone in handling biomedical waste and improper knowledge and practices in them can be a potential threat to all of us. 98% of students knew that seggration of Biomedical waste was important which was higher compared to study by L Laasya Priya[12] where it was 73%.89% correctly knew about the color coding for biomedical waste management which was higher compared to study by L Laasya Priya[12] where it was 73.8%. 68% followed correct way of discarding human anatomical waste which was less compared to study by L Laasya Priya[12] where it was 80.7%. 76% followed correct way of disposing sharp object which was similar compared to study by Mir[13].74% of study subject knew till what time the biomedical waste

Table 1: Knowledge of Biomedical Waste Generation, Hazards and Legislation

Questionnaires	Yes/Correct (%)	No/Incorrect (%)	Not sure (%)
Do you know about Biomedical waste generation and legislation.	80	6	14
State Agency regulates waste generated at health care facilities.	70	7	23
Do you think it is important to know about Biomedical waste generation, hazards and legislation.	98	2	0
When the Biomedical waste rules proposed.	43	57	0
When the amendment to Biomedical waste rules were made.	29	71	0
Which statement describes Biomedical waste.	45	55	0
According to Biomedical waste management rules waste should not be stored beyond.	74	26	0
Little amount of Mercury is enough to contaminate the given surface area of lake.	30	70	0
Who regulates the safe transport of Medical waste.	78	22	0
Whether a separate permit is required to transport Biomedical waste.	68	32	0

Table 2: Attitude/Behavior Assessment to Wards Biomedical Waste

Questionnaires	Yes/Correct (%)	No/Incorrect (%)	Not sure (%)
Safe management of Biomedical waste is not an issue at all (Agree/Disagree)	74	15	11
Waste management efforts is team work (Agree/Disagree)	84	11	5
Waste management by hospital increases the financial burden on Management (Agree/Disagree)	57	15	28
Safe management of waste is an extra burden on work	80	8	12
Do you think institution should organize periodically CME on Biomedical waste management	90	3	7
Will you volunteer to attend program that enhances your knowledge about Biomedical waste	73	15	12
Do you think infectious waste should be sterilized before disposal	75	17	8
Do you feel there should be affluent treatment plant for disinfection and should be set up at your Hospital	57	18	25
Do you think if your institution is not following the Waste properly it should be reported to Pollution control board	91	9	0
Do you think labeling of container before filling it with waste is of any clinical significance	96	4	0

Table 3: Practices Followed About Biomedical Waste Management

Questionnaires	Yes/Correct (%)	No/Incorrect (%)	Not Sure (%)
Do you Know about Color coding segregation of Biomedical waste.	89	5	6
Do you follow color coding of Biomedical waste.	80	7	13
Is the disposal practice correct in your hospital.	40	25	35
How do you dispose sharp objects.	76	24	0
Document with patient confidential information are to be disposed into recycle bin (True/false).	40	23	27
Color code for Biomedical waste to be autoclaved, disinfected are.	61	39	0
What is the total amount of infectious waste generated from health care facility.	15	85	0
Color code from for disposal of normal waste from colleges.	30	70	0
Steps to be taken after exposure with infected blood/body fluid and contaminated sharps.	30	70	0
All of following statement about hazards waste container are true expect.	68	32	0

should be stored at hospital which was similar to study by L Laasya Priya[12]. 84% study subjects agreed that biomedical waste seggration is a team work which was higher compared to study by L Laasya Priya[12] where it was 70.3%. 90% wanted the institution to conduct periodic training about biomedical waste management which was higher compared to study by L Laasya Priya[12] where it was 54.5%.45% of students did not recap the used needle which was less compared to L Laasya Priya[12] where it was 60%.55% of students had taken protective immunization against Hepatitis Bwhich was higher compared to study by Tiwari[14] where it was 33.1%.

CONCLUSION

The knowledge is deficient among the students and need to undergo formal training periodically for their own safety.

Recommendations: All medical institution should have a active Biomedical waste management regulating cell which subjects every Health care personal to Biomedical waste management training before they are posted to clinical postings. All institution should have testing for HIV in case of needle stick injuries. The post exposure prophylaxis should be provided as early as possible in case of needle stick injuries.

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