International Journal of Nursing and Health Research
www.nursingjournal.in
Online ISSN: 2664-6420, Print ISSN: 2664-6412
Received: 21-04-2024, Accepted: 11-05-2024, Published: 06-06-2024
Volume 6, Issue 1, 2024, Page No. 41-43

Study regarding biomedical waste management among B.Sc. nursing students of Mahadev Hospital College, Bilaspur (C.G.)

Payal Sharma[1], Reshma Minj[2*]
[1] Research Supervisor, Department of Mental Health Nursing, Malwanchal University, index Indore, Madhya Pradesh, India
[2] Department of Obstetrics and Gynaecological Nursing Malwanchal University, Indore, Madhya Pradesh, India

Abstract
Biomedical waste (BMW) generated in our nation on a day to day basis is immense and contains infectious and hazardous materials. It is crucial on the part of the employees to know the hazards of the biomedical waste in the work environment and make its disposition effective and in a scientific manner.
Objective: To assess the knowledge regarding biomedical waste management among B.Sc. Nursing students. To find out the association between knowledge score and selected demographic variables regarding biomedical waste management. To prepare and distribute informational booklet on biomedical waste management among B.Sc. Nursing students.
Methodology: The quantitative research approach with descriptive design was used in this study. The sample of the study chosen by non-probability Purposive Sampling Technique, which includes 60 students of B.Sc. nursing 1st and 2nd semester. A self-structured questionnaire was used to collect the data which consists of 6 Socio demographic and 22 self-structured multiple choice questions through interview technique to assess the knowledge regarding biomedical waste management. The collected data was analyzed on the basis of the descriptive and inferential statistics.
Result: The major findings of the study were out of 60 subjects 26 had poor knowledge, 28 had average knowledge and 6 had good knowledge regarding biomedical waste management. The study finding revealed that there is no significant association between the level of knowledge regarding biomedical waste management with their selected demo-graphic variables like age, area of living, gender, previous knowledge.
Conclusion: The overall knowledge towards biomedical waste management was found inadequate. There is a need to increase awareness and knowledge regarding biomedical waste management.

Keywords: Biomedical waste, knowledge

Introduction

Biomedical waste mentions to solid or liquid waste including infectious or likely infectious materials of medical, laboratory, or research origin. The 2016 Solid Waste Management Rules classify solid waste into various categories based on its source and characteristics: municipal solid waste, hazardous waste, construction and demolition waste, plastic waste, e- waste, biomedical waste, and other wastes. Biomedical waste is commonly known as hospital waste or contagious waste because hospital trash contains dangerous components. This waste consists of biological agent-contaminated items such used needles, bandages stained with blood, lab cultures, and other potentially contagious items. So as to stop the open out of pathogens and safeguard healthcare professionals, patients, and the environment, biomedical waste management must be done properly. Medical diagnosis, treatment, research, and laboratory work all result in the production of chemical biomedical waste like organic and inorganic chemical waste. Roughly, 10% of the total hospital waste produced is considered hazardous, with around 85% categorized as non risk waste. A small portion, accounting for 5%, is labeled as highly hazardous. The Ministry of Environment and Forest, Government of India, implemented the Bio-Medical Waste (BMW) (Management and Handling) Rules 1998 on July 20, 1998. In this regard, the Armed Forces Medical Services (AFMS) played a pivotal role in establishing effective biomedical waste management systems in its various Health Care Establishments throughout the nation. The safe and appropriate handling, collection, treatment, and disposal of waste produced in healthcare institutions are all part of biomedical waste management, an crucial element of healthcare operations. It can present significant ultimatum to both human health and the environment if improperly managed. Infectious disease transmission, water source pollution, and soil contamination can all result from poor biomedical waste disposal. Inadequate biomedical waste management causes environmental pollution, unpleasant smell, growth and multiplication of vectors such as insects, worms and way lead to the transmission of disease like typhoid, cholera, hepatitis and AIDS through injuries from and contaminated syringes and needles.

Waste management is an essential part of health care. Poor management of health care waste exposes health care workers, waste handlers and the community to infections, toxic effects and injuries, and risks that pollute the environment. Out of the total amount of waste generated by health care activities, 15% is considered hazardous material that may be infectious, chemical or radioactive. In 2010, unsafe injections were responsible for as many as 33 800 new HIV infections, 1.7 million hepatitis B infections and 315 000 hepatitis C infections.

The nurses spend maximum time with patients in the ward than any other member of health team, it increases their exposure and risk to the hazards present in hospital environment, mainly from Bio medical waste. They need to be well equipped with latest information, skills and practices in managing this waste besides reducing hospital – acquired infections to protect their own health. They are also responsible for preventing risk due to waste to the other

members of health team and community at large (AFACFO. 2002). The improper management in bio medical waste causes environmental problems that causes to air, water and land pollution.

The management of health care waste requires increased attention and diligence to avoid adverse health outcomes associated with poor practices, including exposure to infectious agents and toxic substances. Government commitment and support is needed for universal, sustained and long-term improvement. WHO developed the first global and comprehensive guidance document in 2014 - Safe management of wastes from health care activities. The guide addresses aspects such as regulatory framework, planning issues, waste minimization and recycling, handling, storage and transportation, treatment and disposal options, and training.

Although, there is an increased global awareness among the staff nurses about the hazards and also appropriate management technique but the level of awareness in India is found to be unsatisfactory, so sound knowledge and safe practices among all staff nurses need to be strengthened. There is need to upgrade the level of nursing profession regarding the practices of biomedical waste management system and to control Nosocomial infection and to upgrade the management of the hospitals.

Material and methods

The quantitative research approach with descriptive design was used in this study. The study was conducted in Mahadev Hospital college of Nursing Bilaspur (C.G.). The sample of the study chosen by non-probability Purposive Sampling Technique, which includes 60 students of B.Sc. nursing 1st and 2nd semester. A self-structured questionnaire was used to collect the data which consists of Socio demographic includes age, area, education, gender, previous knowledge, source of knowledge and 22 self-structured multiple choice questions through interview technique to assess the knowledge regarding biomedical waste management. The subjects were classified as follows based on their score includes Inadequate level of knowledge between 5 -10**,** Moderately adequate level of knowledge between 11 - 15 Adequate level of knowledge between 16 – 22, The constructed tool along with blue print and objectives of the study were validated by taking opinion from experts for content validity. Reliability of tool was tested by split half method and Reliability is = 0.79. so the tool were reliable. In order to test the feasibility and practicability pilot study was conducted after obtaining written permission from 10 students of B.Sc. 1st Nursing semester who met the inclusion criteria were selected by using convenient sampling method. Pilot study was conducted using self structured Questionnaire to assess the knowledge. Formal permission was obtained from Principal of Govt. College of Nursing Bilaspur (C.G.) prior of data collection. The data was collected from Mahadev Hospital and college of Nursing Bilaspur (C.G.) After selecting the sample an informed consent obtained and confidentiality assured. The data was collected within the period of 4 weeks. The researcher administered the self prepared questionnaire to 60 students. The knowledge were assessed by using a self structured questionnaire regarding biomedical waste management with view to develop informational booklet. The collected data was analyzed on the basis of the descriptive and inferential statistics.

Result

Findings related to socio-demographic variables it was founded that Maximum subject i.e. 22 (36.37) were age group of 20 – 21 years. Maximum no. of subjects were living in urban area i.e. 45 (75%), Maximum no of subjects i.e. 32 (53.3%) were of B.Sc. nursing 2nd semester and the rest i.e. 28 (46.66%) were of B.Sc. nursing 1st semester. Maximum no. of subjects with respect to gender i.e. 54 (90%) were female and rest i.e. 6 (10%) were male. Maximum subject i.e. 52 (86.65%) were having previous knowledge and rest i.e. 8 (13.35%) were not having previous knowledge. Maximum no. of subject i.e. 29 (48.38%) were having source from books.

Findings related to knowledge of B.Sc. Nursing 1st and 2nd semester regarding biomedical waste management it was founded that out of 60 subjects 26(43.33%) had poor knowledge, 28(46.66%) had average knowledge and 06 (10%) had good knowledge. regarding biomedical waste management.

Findings related to significant association between knowledge score and demographic variables it was founded that demographic data –age, area, gender, previous knowledge, class and source of information had no significant association with selected socio-demographic data.

Conclusion

Study was conducted in order to assess the knowledge of B.Sc. Nursing 1st and 2nd semester students was inadequate regarding biomedical waste management. The majority of the respondents knowledge level was 43.33% (28 women out of 60) who had average knowledge about biomedical waste management. The computed chi square test showed that there was no significant association with selected demographic variables. So orientation programmes, workshop, and conferences can be arranged for the student nurses to update their knowledge of hospital waste.

References

1. Acharya A, Gokhale VA, Joshi D. Impact of biomedical waste on city environment: Case study of Pune, India. IOSR J Appl Chem,2014:6(6):21-7.
2. Jindal AK, Gupta A, Grewal VS, Mahen A. Biomedical waste disposal: A systems analysis. Med J Armed Forces India,2013:69(4):351-6. doi: 10.1016/j.mjafi.2012.09.007.
3. Arunprasath, Kalaivani, R, Lavanya. A Case Study of Biomedical Waste Management in Hospitals. Glob J Health Sci,2009:1(1):82-8.
4. Babu BR, Parande AK, Rajalakshmi R, *et al*. Management of biomedical waste in India and other countries: A review. J Int Environ Appl Sci,2009:4:65-78.
5. Francis CM, de Souza M. Hospital administration. 3rd ed. Jaypee Publishers, 276.
6. CPHEEO. Manual on municipal solid waste management. Central Public Health and Environmental Engineering Organization, New Delhi, India, 2000, 219-27.
7. Rudraswamy S, Nagandini. Global Scenario of Hospital Waste Management. Int J Environ Biol Manage, 2013.
8. Chandra H. An environmental hazard and its management. Int Soc Environ Bot, 1993, 5(3).

9. Salkin IF, Krisiunal E. Medical and infectious waste management. J Am Biol Saf, 2000, 54-5.
10. Kanyal D, Butola LK, Ambad R. Biomedical waste management in India – a review. Indian J Forensic Med Toxicol,2021:15:108-13.
11. Mudil K, Barve A. Challenges to waste management practices in Indian Health Care Sector. Int Conf Environ Sci Eng,2012: IPCBEE: vol. 32.
12. Manekar SS, Bakal RL, Jawarkar RD, *et al*. Challenges and measures during management of mounting biomedical waste in COVID-19 pandemic: an Indian approach. Bull Natl Res Cent,2022:46:159. doi: 10.1186/s42269-022-00847-4.
13. Virk MK, Singal V, Sandhu P. Awareness among urban inhabitants about waste management and its impact on environment. J Hum Ecol,2004.
14. Yadav M. Hospital waste a major problem, 2001, 8.
15. Citizen Consumer and Civil Action Group (CAG). Managing biomedical waste.
16. Maharashtra Pollution Control Board. Report on status of some common facilities for collection, treatment and disposal of biomedical waste in Maharashtra, 2004.
17. National Journal of Integrated Research in Medicine. Awareness of Healthcare Workers Regarding BMW at Tertiary Government Hospital in Dhule (Maharashtra).
18. Mathura P, Patan S, Shobhawat AS. Need of biomedical waste management system in hospitals - An emerging issue: A review. Curr World Environ,2012:7(1):117-24.
19. Tabasi R, Marthandan G. Clinical waste management: A review on important factors in clinical waste generation rate. Int J Sci Technol, 2013, 3(3).
20. Mohankumar S, Kottaiveeran KK. Hospital waste management and biological archives,2011:2(6):1621-6.
21. Pinto VN, Joshi SM, Velankar D. A comparative study of knowledge and attitudes regarding biomedical waste (BMW) management with a preliminary intervention in an academic hospital. Int J Med Public Health, 2014.