

A Pre-experimental Study to Assess the Effectiveness of Planned Teaching Programme on Knowledge and Practice Regarding Aspects of Bio-Medical Waste Management among Health Workers in Selected Health Centres of District Amritsar, Punjab

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ABSTRACT

Background: Bio medical waste is a comprehensive term that encompasses human anatomical materials, animal remains, microbiological waste, sharps, expired or discarded medications including cytotoxic drugs, as well as solid, liquid, and chemical waste. **Aim:** The aim of the study is to assess the effectiveness of a planned teaching program on the knowledge and practice of health workers concerning various aspects of biomedical waste management. **Method:** A pre-experimental study to assess the Effectiveness of Structured Teaching Programme knowledge and Practice regarding Bio-medical waste management among health workers in selected health centers of District Amritsar, Punjab. Pre-experimental research with two group pre- test, post-test design was used. **Sample size and Sampling Technique:** Non-probability purposive sampling technique was used to select a sample of 60 Health workers. Structured questionnaire was prepared to assess the knowledge regarding oral hygiene among school children. Self-structured Teaching Programmed was given to after conducting the pre-test. The post - test was taken after 7 days. **Result and conclusion:** The present study concluded that in pre-test results showed that majority, 41(68.3%), health workers had average knowledge regarding aspects of Bio-medical waste management, while majority 31(51.7%) health workers had inadequate practice regarding aspects of Bio-medical waste management. Whereas in post-test outcomes showed that maximum 52(86.7%) of health workers had good knowledge regarding aspects of Bio-medical waste management and maximum 55(91.7%) health workers had adequate practice regarding aspects of Bio-medical waste management. It showed that post-test mean knowledge score 24.53 ± 2.37 was higher than pre-test mean score 12.58 ± 3.27 , with mean difference of 11.95, with calculated $t=21.68$ at $df=59$, $p=0.001$, has been greatly significant. Findings on practice revealed that post-test mean practice score 18.66 ± 2.89 was higher than pre-test mean score 13.70 ± 2.59 , with mean difference of 4.96, with calculated $t=11.30$ at $df=59$, $p=0.001$ was highly significant. Hence, it is concluded that planned teaching programme has been effective in improving both knowledge alongside practices of health workers concerning selected aspects of biomedical waste management.

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KEYWORDS: Knowledge And Practice, Structural Teaching Programme, Bio-Medical Waste Management.

Background of study:

Biomedical waste is a comprehensive term that encompasses human anatomical materials, animal remains, microbiological and biotechnological waste, sharps, expired or discarded medications (including cytotoxic drugs), as well as solid, liquid, and chemical waste. A lack of adequate knowledge, along with improper handling of such waste, can pose serious risks to both human health as well as environment. Biomedical waste states to the waste produced during the diagnosis, treatment (including surgical procedures), immunization of humans, or research activities involving the production of biological materials. Routine operations in hospitals and other healthcare facilities generate a significant amount of biologically hazardous waste. This type of waste could transmit serious infections—such as HIV, Hepatitis B and C, and tetanus—to healthcare workers, support staff, and members of the public who handle or come into contact with it. Nurses, laboratory technicians, and sanitation workers are among the most frequently exposed to biomedical waste. Therefore, raising awareness is crucial to protect both healthcare professionals and patients from its potential hazards. Common sources of biomedical waste comprise hospitals, nursing homes, clinics, emergency medical facilities, medical investigation centres, and home healthcare settings. Regardless of whether healthcare services are therapeutic, preventive, or promotional in nature, they inevitably generate waste that might pose substantial risks to human health. Compared to general waste, biomedical waste carries a significantly increased risk of causing illness and injury. Biomedical waste has emerged as a significant health concern in many healthcare institutions. In numerous countries, including India, improper disposal practices are widespread, with waste often being dumped illegally into garbage bins and sewage systems. In many areas, healthcare facilities dispose of waste carelessly and without proper regulation. Such practices aid in spread of serious infections, including Hepatitis and HIV/AIDS, particularly among those who handle the waste, alongside general public. Since biomedical waste is typically managed at point of generation, nurses hold a critical responsibility in its proper handling. They have a crucial role in overseeing and managing hospital waste to ensure safety and compliance with standards.

MATERIAL AND METHODS:

Study design: A pre-experimental research design was used to plan and organize the present study.

Study setting: The study was conducted at selected Urban Health (satellite) health centre of District Amritsar, Punjab.

Study subjects: There were 60 health workers in the sample.

Inclusion Criteria:

- Who were willing to give consent.
- Who were available at the time of data collection.

Exclusion Criteria:

- who were not cooperative.
- who were sick or ill.

Sampling: A Purposive sampling method has been utilized to select participants who met specific criteria relevant to research aims.

Study instrument: Self-structured questionnaires were used to assess the knowledge and practice of health workers concerning various aspects of biomedical waste management.

Ethical Consideration: Ethical clearance was taken from research and ethical committee of SGRD Institute of Nursing Pandher, Amritsar and Urban Health (Satellite) Centre, Amritsar for the study to be conducted. Written informed consent was also taken from every participant in the research. Confidentiality of the study subjects was also maintained.

Pilot study: A pilot study was conducted on 10 health workers selected from Urban Primary Health Centre Fatehpur, District Amritsar to assess feasibility of conducting the main research and to determine relevance of research tool. No difficulties were encountered during the pilot study.

Data collection: The researcher gave a brief introduction to the samples and the reason behind the data collection. They received assurances that the information they provided would be kept private and used only for research. Before data collection, informed consent has been obtained from all participants. Purposive Sampling Technique was used.

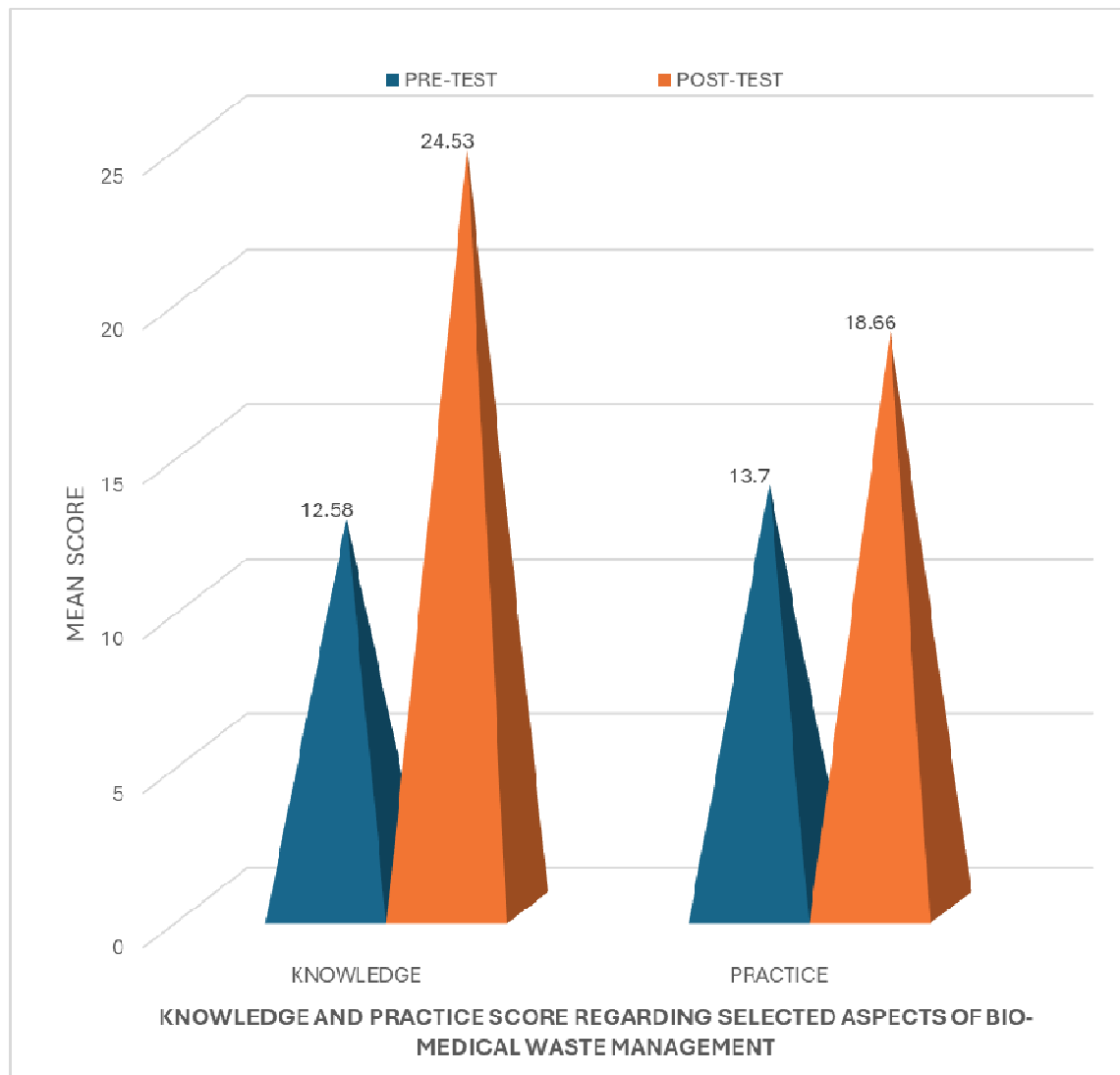
Data analysis: Data analysis will be carried out by study aims utilizing both descriptive alongside inferential statistics. Analysis plan includes:

- Calculation of frequency, percentage, mean, and standard deviation.
- Use of paired t-test to assess efficiency of the intervention by testing the hypothesis.
- Application of the Chi-square test to examine associations between variables.

Result: The present study concluded that in pre-test results showed that majority, 41(68.3%), health workers had average knowledge regarding aspects of Bio-medical waste management, while majority 31(51.7%) health workers had inadequate practice

regarding aspects of Bio-medical waste management. Whereas in post-test outcomes showed that maximum 52(86.7%) of health workers had good knowledge regarding aspects of Bio-medical waste management and maximum 55(91.7%) health workers had adequate practice regarding aspects of Bio-medical waste management. It showed that post-test mean knowledge score 24.53 ± 2.37 was higher than pre-test mean score 12.58 ± 3.27 , with mean difference of 11.95, with calculated $t=21.68$ at $df=59$, $p=0.001$, has

been greatly significant. Findings on practice revealed that post-test mean practice score 18.66 ± 2.89 was higher than pre-test mean score 13.70 ± 2.59 , with mean difference of 4.96, with calculated $t=11.30$ at $df=59$, $p=0.001$ was highly significant. Hence, it concluded that planned teaching programme has been effective in improving both knowledge alongside practices of health workers concerning selected aspects of biomedical waste management.



Conclusion and Recommendations: The present study concluded that in pre-test results showed that majority, 41(68.3%), health workers had average knowledge regarding aspects of Bio-medical waste management, as well as 19(31.7%) health workers had poor knowledge regarding aspects of Bio-medical waste management, while majority 31(51.7%) health workers had inadequate practice regarding aspects of Bio-medical waste management and only 29(48.3%) health workers had adequate practice regarding aspects of Bio-medical waste management. Whereas in post-test outcomes showed that maximum 52(86.7%) of health workers had good knowledge

regarding aspects of Bio-medical waste management and others 8(13.3%) health workers had average knowledge regarding aspects of Bio-medical waste management, whereas a maximum 55(91.7%) health workers had adequate practice regarding aspects of Biomedical waste management and 7(8.3%) had inadequate practice regarding aspects of Bio-medical waste management. It showed that post-test mean knowledge score 24.53 ± 2.37 was higher than pre-test mean score 12.58 ± 3.27 , with mean difference of 11.95, with calculated $t=21.68$ at $df=59$, $p=0.001$, has been greatly significant. Findings on practice revealed that post- test mean practice score 18.66 ± 2.89 was

higher than pretest mean score 13.70 ± 2.59 , with mean difference of 4.96, with calculated $t=11.30$ at $df=59$, $p=0.001$ was highly significant. Hence, it concluded that planned teaching programme has been effective in improving both knowledge alongside practices of health workers concerning selected aspects of biomedical waste management.

Recommendations:

- Research can be performed on a large sample size.
- Research can be performed in different settings.
- Research can be performed to evaluate efficiency of demonstration on knowledge.
- Research can be performed practice of BWM among healthcare workers
- The follow-up study could be carried out to evaluate practice of staff nurses in handling BWM.
- Research could be carried out to determine occurrence of health problems while handling BWM among healthcare workers.
- Research could be carried out to assess incidence of injuries among health workers during handling of BWM.

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Nil

CONFLICTS OF INTEREST: There are no conflicts of interest.

REFERENCES

- [1] Sakharkar B.M, Principles of hospital administration and planning. 2nd ed. New Delhi: Jaypee brothers; Page No. 277 – 279.
- [2] Sharma AK. Bio-Medical Waste (Management and Handling) Rules. Bhopal, India. Suvidha Law House. 1998.
- [3] Praveen Mathur, et al. Need of Biomedical Waste Management System in Hospitals - An Emerging issue - A Review. Current World Environment. 2012; 7(1):117-124.
- [4] Pandit NB, Mehta HK, Kartha GP, Choudhary SK .Management of bio-medical waste: awareness and practices in a district of Gujarat. Indian J Public Health, 2005;49(4):245-7.
- [5] Safe Management of Wastes from Health Care Activities. 1st ed. Geneva. WHO. 1999.
- [6] MC Yadavannavar, Aditya S Berad, and PB Jagirdar. Biomedical Waste Management: A Study of Knowledge, Attitude, and Practices in a Tertiary Health Care Institution in Bijapur. Indian journal of community medicine, 2010 ; 35(1):170-171.
- [7] Rao PH. Report: Hospital waste management--awareness and practices: a study of three states in India. Waste Manag Res. 2018;26(3):297-303.
- [8] Singh K, Arora SK, Dhadwal PJ, Singla A, John S. Bio-medical waste management in the U.T., Chandigarh. Journal of environmental science Eng. 2014; 46(1): 55-60.
- [9] Patil GV, Pokhrel K. Biomedical solid waste management in an Indian hospital: a case study, waste management. 2005;25(6): 592-9.
- [10] WHO. Healthcare waste www.who.int/media/centre/factsheets/fs253/en
- [11] Jindal AK et al. Biomedical waste disposal: A systems analysis. Med J Armed Forces India. 2013; 69(4):351-356.
- [12] Mesfin Kote Debere, et al. Assessment of the health care waste generation rates and its management system in hospitals of Addis Ababa, Ethiopia, MC Public Health. 2011-2013; 13:28.
- [13] Hakim SA. Mohsen A. Bakr I knowledge, attitude and practices of healthcare personnel towards waste disposal management at Ain Shams University Hospitals, Cairo. Eastern Mediterranean Health Journal. 2014 jan; 20(5): p. 347-354.
- [14] Saini S, Nagarajan SS. Knowledge, Attitude and practices of Biomedical waste management Amongst Staff of a Tertiary Level Hospital in India. Journal of the Academy of Hospital Administration. 2013 Jun; 17(2).
- [15] Pasupathi P, Sindhu S, Ponnusha S. Biomedical waste management for Health care industry, Int J Biol Med Res. 2011 Feb; 2(1): p. 472-486.