

A STUDY TO ASSESS THE EFFECTIVENESS OF COMPUTER ASSISTED INSTRUCTION ON KNOWLEDGE OF SAFETY PRECAUTIONS IN HANDLING HOSPITAL WASTE AMONG HOSPITAL STAFF AT A SELECTED HOSPITAL IN BARABANKI, UTTAR PRADESH, INDIA

Mr. Ratheesh* & Dr. Ian Clement **

*Ph. D. Scholar, Himalayan University, Itanagar, Arunachal Pradesh, India.

** Professor cum Vice Principal, Bhai Gurudas Institute, Sangrur, Punjab, India.

ABSTRACT

A Study to assess the effectiveness of Computer Assisted Instruction on knowledge of safety precautions in handling Hospital Waste among hospital Staff at a selected hospital in Barabanki, Uttar Pradesh, India

Objectives of the Study:

1. To test the effectiveness of CAI (Computer Assisted Instruction) on knowledge among hospital staff regarding safety precautions in handling hospital waste.
2. To associate pre-test level of knowledge among hospital staff regarding safety precautions in handling hospital waste with certain demographic variables such as their age, sex, experience etc.

Research Design and Method: Fifty hospital staff in Medical and Surgical Wards in MIMS were selected using simple random sampling technique. The data were collected using structured interview schedule. Pre-test was done using structured interview schedule to assess the hospital staff's knowledge about safety precautions in handling hospital waste. Computer Assisted Instruction about safety precautions in handling hospital waste was given. After two weeks a post-test was conducted using same structured interview schedule.

Result: The knowledge about safety precautions in handling hospital waste among hospital staff was significantly increased ($p < 0.001$) after CAI. There was significant association found between pre-test knowledge on safety precautions in handling hospital waste among hospital staff with demographic variables such as their gender, type of occupation and educational status, ($p < 0.001$), while age and experience were not found associated their knowledge.

Conclusion: The study results showed that Computer Assisted Instruction had improved the knowledge on safety precautions on handling hospital waste among hospital staff. Such teaching programme can be carried out in the hospital to improve the knowledge of hospital staff and thereby to implement effective hospital waste management.

Keywords: safety precautions in handling hospital waste, computer assisted instruction

ABOUT AUTHORS



Author, Mr. Ratheesh is a research scholar in Himalayan University, Itanagar, Arunachal Pradesh, India.



Author, Dr. Ian Clement is a renowned professor cum vice principal of Bhai Gurudas Institute, Sangrur, Punjab, India.

INTRODUCTION

Hospital wastes have always been considered as potentially hazardous in view of the inherent potential for communication of infection. Hospital wastes are bio-medical wastes generated in different departments of the hospital. Hospitals generate on an average, between 1 - 2 kg of waste per bed per day. It is estimated that of the total waste, about 85 per cent is general waste and 15 per cent infectious waste.¹

The concept of environmental hygiene and sanitation has been there in India since the time of Rig Veda. The National Guidelines for Management of Hospital Waste, based on the Biomedical Waste Rules, were prepared by the Directorate General of Health Services, Ministry of health and Family welfare.² Lack of awareness about the importance and benefits of waste management programme in health care facilities, are due to several reasons, which include lack of motivation lack of proper training and education regarding hospital waste management.³

Waste should be collected and segregated at the site of generation itself. Segregation of waste denotes the separation of waste into various specified categories as per its nature. It aims to keep the harmful and infected material separate from the harmless and non-contagious waste.¹ Minimum Programme Elements of a Complete Hospital Waste Management includes - clearly assigned staff responsibilities, a written waste management plan, and written internal rules for generation, handling, storage, treatment and disposal of waste.⁴

The purpose of minimum hospital waste programme is to establish responsibilities, work practices, and systematic procedures for handling, packaging, collection, treatment and disposal of regulated medical waste. The policy is designed to protect people, equipment, property and the environment by safely controlling regulated medical waste materials from the point of generation to disposal according to the federal, state and local governmental regulations.⁴

NEED FOR THE STUDY

According to WHO with regard to life threatening viral infections such as HIV/AIDS and Hepatitis B and C, health care workers, and nurses, are at greatest risk of infection through injuries from contaminated sharps (largely hypodermic needles).⁷ In USA, approximately 86,000 to 1,60,000 health care workers are injured annually by sharp biomedical waste. Out of these about 164 to 323 persons develop Hepatitis B infection subsequently. Nearly 66% of the rag pickers in India suffer from an injury (or) wound because of biomedical waste.¹

The aim of hospital waste management is to prevent the transmission of diseases from patient to patient and from patient to health workers.

STATEMENT OF THE PROBLEM

A study to assess the effectiveness of Computer Assisted Instruction on knowledge of safety precautions in handling hospital waste among hospital staff in MIMS (Mayo Institute of Medical Sciences), Barabanki in Uttar Pradesh

OBJECTIVES

1. To test the effectiveness of *CAI (Computer Assisted Instruction)* on knowledge of safety precautions in handling hospital waste, among hospital staff.
2. To associate the pre-test level of knowledge among hospital staff, regarding safety precautions in handling hospital waste with certain demographic variables such as their age, gender, experience etc.

HYPOTHESIS

The mean post-test knowledge score after administering Computer Assisted Instruction to hospital staff on safety precautions in handling hospital waste will be a significantly higher than their mean pre-test knowledge score.

MATERIAL AND METHODS

Research Design: One group-pre-test, post-test design was employed for this study.

Variables: –

Independent variable The Computer Assisted Instruction

Dependent variable: The knowledge about safety precautions on handling hospital waste, among hospital staff working in medical and surgical wards at MIMS.

Extraneous variables: –

- Individual difference in the subjects
- Exposure to other training programme/s on handling hospital wastes.

Setting of the Study: This study was conducted in the Medical and Surgical wards of MIMS (Mayo Institute of Medical Sciences) Hospital, Barabanki in Uttar Pradesh.

Population: Both male and female staff (hospital workers, sweepers and sanitary workers) handling hospital waste in any hospital. The male and female hospital staff (hospital workers, sweepers and sanitary workers) working in Medical and Surgical wards in MIMS.

Sampling Technique: Simple random sampling technique was adopted to select the subjects for the study.

Ethical Consideration: Hospital staff was explained about the purpose of the study and written informed consent was obtained from each hospital staff. The study was conducted after approval was obtained from institutional human ethics committee. No hospital staffs were taken off from their routine work and participants were told that they were under no compulsion to participate in the study.

Criteria for Sample Selection

Inclusion Criteria:

- Male and female hospital staff working at MIMS Hospital.
- Hospital staff with more than one year experience
- Hospital staff working in surgical and medical wards only.

Exclusion Criteria:

- Hospital staff that are not willing to participate.
- Hospital staff that are not able to understand Hindi.

Development of Data Collection Instrument: The research tool was developed by doing extensive literature review. Five experts from the field of nursing provided their opinions and their valuable suggestions were incorporated to develop the research tool.

Content Validity: Content validity was obtained from 7 experts. Suggestions were incorporated and the tool and intervention were finalised based on their suggestions.

Description of the Data Collection Instrument: The tool used for data collection was a structured interview schedule. It was organised in 3 sections —

Section – A:

Demographic data such as age, gender, educational status, nature of employment, work experience and marital status.

Section – B:

Knowledge on handling hospital waste: It consisted of 20 closed ended questions (multiple choices). Correct answer was scored as "one" and wrong answer was scored as "Zero".

Section – C:

Knowledge on using personal protective devices and disease prevention: It consisted of 10 closed ended questions (multiple choices). Correct answer was scored as "one" and wrong answer was scored as "zero".

Score Interpretation: The knowledge aspect consisted of 30 questions. Correct answer was given a score of 1 and wrong answer was given a score of 0. The total score of 30 on knowledge was converted to 100%. The total knowledge score was interpreted as below —

<50% - Inadequate knowledge

51%-75% - Moderately adequate knowledge

>75% - Adequate knowledge

Sample Size: 50 members of hospital staff who met inclusion criteria were selected.

Reliability: Using test and retest method reliability was checked. The tool was reliable. Score $r = 0.72$

Data Collection Procedure: The data collection was done for about four weeks. Hospital staff members working in Medical/ Surgical wards, at MIMS Hospital, were selected based on the inclusion criteria. The pre-test was conducted after obtaining consent from the hospital staff selected. Pre-test questionnaire was administered to the participants.

On the same day after the pre-test the hospital staff were gathered and seated comfortably at the lecture hall. Ten hospital staff per day were selected and given Computer Assisted Instruction on knowledge about safety precautions in handling hospital waste. After one week of Computer Assisted Instruction, post-test was conducted using the same questionnaire.

Description of the Intervention The Computer Assisted Instruction focused on hospital waste, types, collection, storage, segregation, disposal, diseases prevention and wearing personnel protective devices.

Plan for Data Analysis: After the scoring, the pre-test, post-test results were tabulated. The statistical methods applied for analysis were —

- Number, percentage, mean and standard deviation.
- To test the effectiveness of innovative teaching programme, one way repeated measures ANOVA was used.
- To compare the pre-test with post-test, 't' test was used.

FINDINGS AND DISCUSSION

First objective: It was to test the effectiveness of Computer Assisted Instruction on knowledge among hospital staff regarding safety precautions in handling hospital waste. In this study result revealed that the knowledge on safety precautions in handling hospital waste among hospital staff got significantly increased ($p < 0.001$) after Computer Assisted Instruction.

Second Objective: To find if there was a significant association between pre-test knowledge among hospital staff about safety precautions in handling hospital waste, and their demographic variables such as gender, type of occupation and education status, ($p < 0.001$). Hence, the research hypothesis is accepted that the mean post-test knowledge score on safety precautions in handling hospital waste will be a significantly higher than the mean pre-test knowledge of hospital staff after CAI.

MAJOR FINDINGS OF THE STUDY

1. The knowledge regarding safety precautions in handling hospital waste among hospital staff was found significantly enhanced ($p < 0.001$) after CAI.
2. There was a significant association between pre-test knowledge about safety precautions in handling hospital waste, among hospital staff and their demographic variables such as gender, type of occupation and education status, ($p < 0.001$).

CONCLUSION

The present study assessed the effectiveness of CAI on enhancing knowledge of safety precautions in handling hospital waste among hospital staff. This implies that CAI had improved the knowledge among hospital staff on safety precautions in handling hospital waste. Such teaching programme can be conducted in the government and private hospitals to improve the knowledge of large sections of hospitals staff and thereby improve the hospital waste management in every sector of the healthcare system.

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