

# A Study to Assess the Effectiveness of Self Instructional Module (SIM) on Knowledge and Practices Regarding Biomedical Waste Management among Staff Nurses Working in Indira Gandhi Medical College and Hospital, Shimla, Himachal Pradesh

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**Abstract:** Background: Hospital waste adds to the risk for patients and personnel who handle these wastes. Mishandling of Biomedical Waste poses a threat to public health and environment. Adequate knowledge about the health hazards of hospital waste, proper technique and methods of handling the waste and practice of safety measures can go a long way towards the safe disposal of hazardous hospital waste and protects the community from various adverse effects of the hazardous waste. Aim: The aim of the present study was to evaluate the effectiveness of Self Instructional Module regarding the management of Biomedical Waste among the Staff Nurses working in different wards at Indira Gandhi Medical College and Hospital, Shimla, Himachal Pradesh. Methodology: This pre-experimental study included 30 Staff Nurses in different wards of I.G.M.C. and Hospital, Shimla. Non-probability convenient sampling technique was used to select the 30 staff nurses. The data was collected by self-administered tool consisting of 30 questions to evaluate their knowledge and checklist of 20 questions to evaluate practices regarding the management of Biomedical Waste. Result: The study findings depict that in pre-test, 50% Staff Nurses had good knowledge and 50% had average knowledge while in post-test, 100% Staff Nurses had good knowledge regarding Biomedical Waste Management. It also revealed that in pre-test, 60% Staff Nurses had good practices and 40% had average practices while in post-test, 96.7% Staff Nurses had good practices and 3.3% had average practices regarding Biomedical Waste Management. The pre-test knowledge score was 70.11% and post-test knowledge score was 89.33%. It showed difference of 19.22%. And the pre-test practice score was 75.17% and post-test practice score was 86.83%. It showed difference of 11.67%. Hence, Self Instructional Module on Biomedical Waste Management was effective. Conclusion: Self Instructional Module was proved effective in enhancing the knowledge and improving the practices regarding the management of Biomedical Waste Management.

**Keywords:** Biomedical Waste, Staff Nurses, Knowledge, Practices, Study, Management

## 1. Introduction

Hospital is one of the complex institutions which are frequented visited by people from every walk of life from society without any distinction between age, sex, race and religion. This is over and above the normal inhabitants of hospital: patients and personnel. All of them produce waste which is increasing in its amount and type due to advances in scientific knowledge and is creating its impact. The hospital waste, in addition to the risk for patients and personnel who handle these wastes, poses a threat to public health and environment. Keeping in view inappropriate Biomedical Waste Management, the Ministry of Environment and Forest notified the Biomedical Waste Management and Handling Rules in July 1998.<sup>1,2</sup>

The healthcare services while providing services, curative, promotive or preventive inevitably create waste which itself may be hazardous to health. It is estimated that annually about 0.33 million tonnes of hospital waste is generated in India and, the waste generation rate ranges from 0.5 to 2.0 kg per bed per day.<sup>5,6</sup>

Effective management of biomedical waste is not only a legal necessity but also a social responsibility. Adequate knowledge about the health hazards of hospital waste, proper technique and methods of handling the waste, and practice of safety measures can go a long way toward the safe disposal of hazardous hospital waste and protect the community from various adverse effects of the hazardous waste.<sup>3,4</sup>

The Nurses spend maximum time with patients in the Ward than any other member of the health team, increases their exposure and risk to the hazards present in hospital environment, mainly Biomedical 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.<sup>2</sup>

## 2. Objectives

- 1) To assess the knowledge regarding Biomedical Waste Management among the Staff Nurses

- 2) To assess the practices regarding Biomedical Waste Management among the Staff Nurses
- 3) To evaluate the effectiveness of Self Instructional Module (SIM) regarding Biomedical Waste Management among the Staff Nurses
- 4) To find out the association between Self Instructional Module (SIM) with selected demographical variables.

### 3. Methodology

A Quantitative, pre-experimental approach was adopted for the study. The target population for the present study was 30 staff nurses working in different wards of I.G.M.C. and Hospital, Shimla. Non-probability convenient sampling technique was used to select the 30 staff nurses. Staff Nurses, who were not present at the time of data collection, were not willing to participate in research study excluded from the study. The self structured questionnaire was developed and utilized for data collection. The self-administered tool consisting of 30 questions to evaluate their knowledge and checklist of 20 questions to evaluate practices regarding the management of Biomedical Waste.

To ensure the content validity of the tool (structured questionnaire), it was submitted to ten experts. Reliability of the tool was calculated using test-retest method, followed by the application of Karl Pearson's Correlation Coefficient.

Scoring of knowledge and practices of Staff Nurses regarding biomedical waste management is done as the range of knowledge score was from 0- 30. Based on sum scores, level of knowledge was classified in 3 categories i.e. Good knowledge 21-30 score, average knowledge 11-20 score and poor knowledge 0-10. The range of practice score was from 0-20. Based on sum scores, level of practices was classified in 3 categories i.e. Good practices 15 - 20 score, average practices 8 - 14 score and poor practices 0-7 score.

Ethical approval was taken from Medical Superintendent IGMC, Shimla to conduct the study. Written informed Consent was taken for the study sample regarding their willingness to participate in the research study and the purpose for carrying out research study was explained to the participants. Confidentiality of the information of the sample was maintained.

Data was analyzed by descriptive and inferential statistics i.e. frequency and percentage distribution, mean percentage, median, chi square to determine the association between knowledge score with selected demographical variables and paired T-test used to calculate the effectiveness of self instructional module.

### 4. Result

Frequency and percentage distribution of Staff Nurses according to socio-demographic variables revealed that Maximum number of subjects 9 (30%) were from Medicine Ward, 12 (40%) were qualified up to Post-Basic B.Sc. Nursing, 26 (86.7%) had 0-5 years of job experience, 14 (46.7%) subjects had attended previous in-service programme <5 times regarding Biomedical Waste Management, 15 (50%) of subjects had regular job.

**Table 1:** Frequency and Percentage Distribution of Staff Nurses as per their Knowledge Score( Pre- Post test) regarding Biomedical Waste Management, N=30

Criteria Measure Of Knowledge Score		
Score Level	Pre-Test [f(%)]	Post-Test [f(%)]
Poor(0-10)	0(0%)	0(0%)
Average(11-20)	15(50%)	0(0%)
Good(21-30)	15(50%)	30(100%)

Maximum score = 30, Minimum score = 0

Table 1 revealed that in Pre- test 15(50%) staff nurses had Average knowledge, 15(50%) staff nurses had good knowledge and in Post- test 30 (100%) had good knowledge regarding Biomedical Waste Management.

**Table 2:** Frequency and Percentage Distribution of Staff Nurses as per their Practice Score ( Pre- post test) regarding Biomedical Waste Management, N=30

Criteria Measure Of Practice Score		
Score Level	Pre-Test [f(%)]	Post-Test [f(%)]
Poor (0-7)	0(0%)	0(0%)
Average (8-14)	12(40%)	1(3.3%)
Good (15-20)	18(60%)	29(96.7%)

Maximum score=20, Minimum score=0

Table 2 depicted that in Pre-test 18 (60%) staff nurses had good practices, 12 (40%) staff nurses had average practices and in Post- test 29(96.7%) had good practices whereas only 1 (3.3%) staff nurses had average practices regarding Biomedical Waste Management.

**Table 3:** Comparison of Pre-test and Post-test Knowledge Scores, N=30

Paired T test	Mean±S.D.	Mean %	Range	Mean Diff.	Paired T test	p-value	Table value
Pre -test	21.03± 3.774	70.10	15-28	5.770	7.689	<0.001	2.05
Post -test	26.8± 2.265	89.30	22-30		* significant		

\*\* significant at p value <0.001

Table 3 revealed that there is paired T test value was found to be significant at p value < 0.001 which means there is

significant increase in knowledge score after administration of SIM.

**Table 4:** Comparison of Pre-test and Post-test Practice Scores, N=30

Paired T test	Mean±S.D.	Mean %	Range	Mean Diff.	Paired T test	p-value	Table value
Pre -test	15.03±1.65	75.20	11-18	2.340	8.694* *significant	<0.001	2.05
Post -test	17.37±1.159	86.80	14-19				

\*\* significant at p value <0.001

Table 4 revealed that paired T test value was found to be significant at p value < 0.001 which means there is significant increase in practice score after administration of SIM. No significant association found between knowledge score and selected socio-demographic variables

## 5. Conclusion

The aim of the present study was to evaluate the effectiveness of Self Instructional Module regarding the management of Biomedical Waste among the Staff Nurses working in different wards at Indira Gandhi Medical College and Hospital, Shimla, Himachal Pradesh. The study findings depict that in pre-test, 50% Staff Nurses had good knowledge and 50% had average knowledge while in post-test, 100% Staff Nurses had good knowledge regarding Biomedical Waste Management. It also revealed that in pre-test, 60% Staff Nurses had good practices and 40% had average practices while in post-test, 96.7% Staff Nurses had good practices and 3.3% had average practices regarding Biomedical Waste Management. The pre-test knowledge score was 70.11% and post-test knowledge score was 89.33%. It showed difference of 19.22%. And the pre-test practice score was 75.17% and post-test practice score was 86.83%. It showed difference of 11.67%. Hence, Self Instructional Module on Biomedical Waste Management was effective.

## 6. Acknowledgement

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