

# A Quasi Experimental Study to Evaluate the Effectiveness of Information Education and Communication Package Regarding the Knowledge and Attitude on Bio Medical Waste Management among the GNM Students in Selected Schools of District Sonipat, Haryana

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## Abstract

*“Let the Wastes of “The Sick” Not Contaminate the Lives of “The Healthy”.*

The pioneer of modern Nursing, Miss. Florence Nightingale considers health is linked with environmental factors like pure or fresh air, pure water, efficient drainage, cleanliness and light especially direct sunlight hospitals and other health care facilities generates lots of waste which can transmit infections, particularly HIV, Hepatitis B and C and tetanus, to the people who handle it or come in contact with it<sup>1</sup>.

According to WHO (World Health Organization) report 2013, around 85% of hospital waste is non infectious, 10% is infective and remaining 5% is non infectious but hazardous. Biomedical waste should be managed through a pathway that includes point of generation, storage, and segregation, collection, processing, transportation, treatment and disposal. Nursing as a profession is now accountable of staff and students nurses for competence and performance. The nurses spend maximum time with patients in the ward than any other member of the health team, this 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 practice 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>

**Aims:** The study aims to evaluate the effectiveness of information education and communication package regarding the knowledge and attitude on bio medical waste management among GNM students in selected schools of district sonipat, Haryana.

**Methodology:** The research approach for this study was Quantitative and evaluative, the design used for this study was Quasi experimental research design. Sample Size of the study was 80 GNM1st year students selected by purposive sampling.

**Conclusion:** Near about more than half of the students had average level of knowledge 62.50% regarding management of bio medical waste management and 57.50% had less favorable attitude on bio medical waste management.

**Keywords:** Effectiveness, IEC package, Bio medical waste, bio medical waste management, Knowledge, Attitude.

## Introduction

Since beginning the hospital are known for the treatment of sick persons but we are unaware about

the environment. Now it is well established fact that there are many adverse and harmful effects to the environment include human beings which are caused by the biomedical waste generated during patient care<sup>3</sup>.

“BIO MEDICAL WASTE” is any waste, which is generated during diagnosis, treatment or immunization of human beings. This waste is also generated during research activities or in the production or testing of biological material. Infectious waste risks the health of not only the hospitals staffs, patients and their relatives who are visiting or attending them but also the health of general public also.<sup>4</sup>

Biomedical waste consists of solids, liquids, sharps and laboratory waste that are potentially infectious or dangerous and are considered bio-waste. It must be properly managed to protect the general public, especially healthcare and sanitation workers who are regularly exposed to biomedical waste as an occupational hazard. Proper handling, treatment and disposal of biomedical waste are important elements of healthcare infection control programme<sup>5</sup>. Health care workers need to understand the difference between biomedical waste and other waste connected with the hospital. Hospital waste refers to all waste, biological or non biological that is discarded.

According to WHO (World Health Organization) report 2013, around 85% of hospital waste is non infectious, 10% is infective and remaining 5% is non infectious but hazardous. Biomedical waste should be managed through a pathway that includes point of generation, storage, and segregation, collection, processing, transportation, treatment and disposal.<sup>6</sup>

#### **Color Coded Bags or Containers:**

- **Red bag:** Infected plastics like infusion set, tubing's, catheters and microbiological waste.
- **Black bag:** All sorts of non infected general waste in which food waste from wards, canteens and dining halls.
- **White/Blue bag:** Glasses.
- **Yellow bag:** Soiled Waste (Items contaminated with blood, and body fluids, Animal waste (animal tissues, organs, bleeding parts, fluids, Microbiology & Biotechnology Waste (Wastes from Lab. ect)<sup>8</sup>

Among all workers nurses spending more and long time in hospitals. It has been proved that the nurses are more victims of hepatitis B and HIV infection because not handling biomedical waste properly. For the prevention of infections, nurses should take precautions according to the Centre for Disease Control and Prevention and Occupational Safety and Health

Administration. Universal precautions refer to an infection control system which assumes that any direct contact with patients particularly their body fluids have the potential for transmitting the diseases<sup>9</sup>.

**Statement of the Problem:** A Quasi Experimental Study to Evaluate the Effectiveness of Information Education and Communication (IEC) Package Regarding Knowledge and Attitude on Bio Medical Waste Management Among the GNM Students in Selected Schools, of District Sonipat, Haryana.

#### **Objectives:**

- To assess the pre test and post test level of knowledge and attitude among GNM students on bio medical waste management in experimental and control group.
- To evaluate the effectiveness of information education and communication package in term of knowledge and attitude on bio medical waste management, between experimental and control group.
- To find out the correlation between pre test knowledge score and pre test attitude score among GNM students on bio medical waste management in Experimental group.
- To find out the level of association between mean pre test knowledge score and andmean pre test attitude selected socio demographic variables in experimental and control group.

#### **Operational Definitions:**

- **Evaluate:** It means to look and determine whether the purpose of information education communication package on bio medical waste management was achieved or not.
- **Effectiveness:** It refers to the extent to which information education and communication package on bio medical waste management achieves the desired effect in improving the knowledge and attitude of first years GNM students evidenced by gain in post test knowledge and attitude scores.
- **Information education and communication package:** In this study it refers to systematically developed instructional method and visual aids designed and used for first years GNM students to provide information regarding biomedical waste management prepared in English and Hindi language.

- **Knowledge and attitude:** In this study, it refers to the awareness of GNM 1<sup>st</sup> year students regarding biomedical waste management.
- **Bio medical waste:** In this study, bio medical waste refers to the waste generated during the diagnosis, treatment or immunization of human being which include from categories I to categories X.
- **Biomedical waste management:** In this study, bio medical waste management means a technique, of dealing with bio medical waste, from the point of generation to the disposal of waste.
- **GNM (General Nursing Midwifery) students:** In this study, it refers to GNM 1<sup>st</sup> year students of selected nursing schools of district Sonipat Haryana.

## Material and Method

In this study the quantitative approach was used to carry out the study. The sample size for the present study was 80 GNM students in selected schools of district sonipat by using quasi experimental research design and purposive sampling technique.

**Tools and Technique of Data Collection:** In this study researcher used self structured knowledge questionnaire and self structured attitude scale to measure knowledge and attitude on bio medical waste management.

## Result

**Table 1: Distribution of samples according to level of knowledge in experimental and control group experimental group (N=40)**

S.No.	Level of knowledge	Pre test	Post test
		Frequency Percentage	FrequencyPercentage
1.	Low (1-12)	15 37.50	4 10.00
2.	Average (13-22)	25 62.50	34 85.00
3.	High (23-32)	0 0.00	2 5.00
<b>Control group (N = 40)</b>			
1.	Low (1-12)	17 42.50	12 30.00
2.	Average (13-22)	23 57.50	28 70.00
3.	Hig h(23-32)	0 0.00	0 0.00

The above table shows the distribution of samples according to the pre test and post test level of knowledge in experimental group.

With regards to pre test level of knowledge on bio medical waste management majority of samples 25 (62.50%) had average level of knowledge. Samples with low level of knowledge were 15 (37.50%). None of the samples belong to high level of knowledge.

According to post test level of knowledge on bio medical waste management an over whelming majority of samples 34 (85.00%) had average level of knowledge. One tenth of the samples 4 (10.00%) had low level of knowledge. Few samples with high level of knowledge were 2 (5.00%)

The table shows the distribution of samples according to the pre test and post test level of knowledge in control group.

With regards to pre test level of knowledge on bio medical waste management majority of samples 23 (57.50%) had average knowledge. Samples with low level of knowledge were 17 (42.50%). None of the samples were present with high level of knowledge.

With regards to post test level of knowledge on bio medical waste management majority of samples 28 (70.00%) had an average knowledge. Samples with low level of knowledge were 12 (30.00%). None of the samples were present with high level of knowledge.

**Self structured attitude rating scale on bio medical waste management:** For assessing the attitude of GNM students on bio medical waste management the researcher constructed a 5 point likert scale. It consists of 12 questions based on the bio medical waste management. The maximum score was 60 and minimum score was 12.

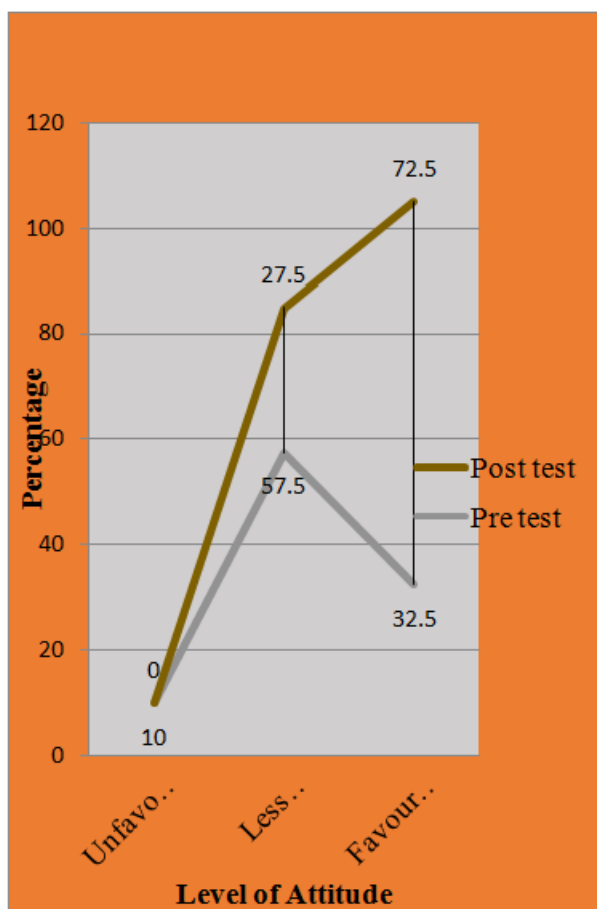
**For Positive Statement Score**

Strongly Agree	Agree	Uncertain	Disagree	Agree
5	4	3	2	1

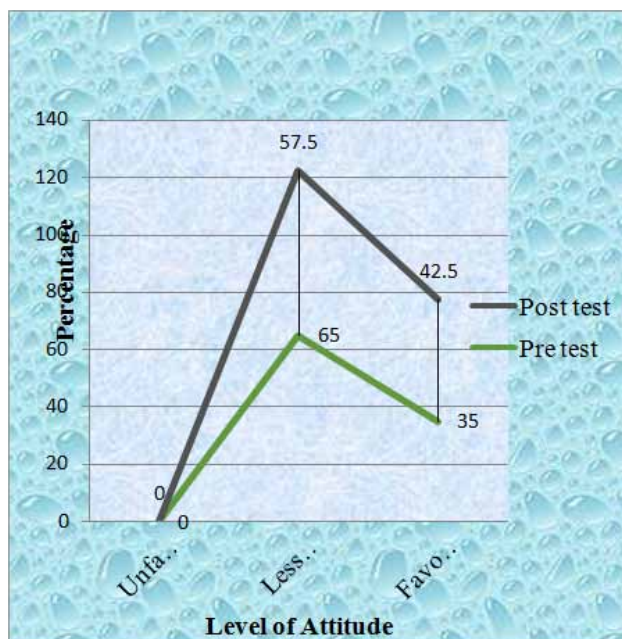
**For Negative Statement Score**

Strongly Agree	Agree	Uncertain	Disagree	Agree
1	2	3	4	5

Out of 12 statements, the positive statements were 1, 2, 3, 4, 7, 8, 10 and 12. The negative statements were 5, 6, 9 and 11.

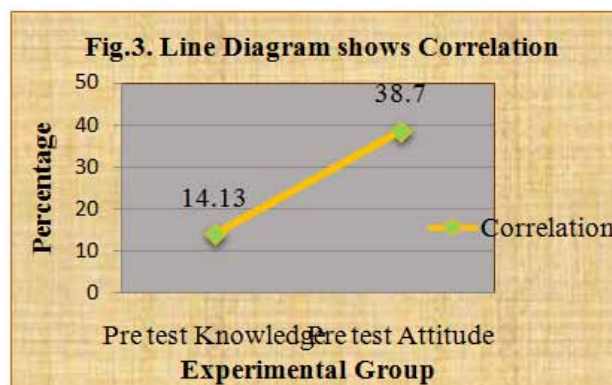


**Fig. 1: Line Diagram Shows Attitude Distribution Between in Experimental Group**



**Fig. 2: Line Diagram Shows Level of Attitude Distribution in Control Group**

**Effectiveness of Iec Package on Bio Medical Waste Management:** Both (knowledge and attitude score) in experimental group.



**Fig. 3. Line Diagram shows Correlation**

**Level of Correlation between Pre Test Knowledge Score and Pre Test Attitude Score (Experimental Group):** The above diagram shows mild positive correlation between pretest knowledge and pre test attitude score.

**Discussion**

The finding of the study according to the objectives and quotes various supportive studies, similar to those of the present study which had been done in the past.

The aim of the present study was to evaluate the effectiveness of Information Education and

Communication Package on Bio Medical Waste Management in terms of improving knowledge and attitude of GNM students.

- With regards to age (Years) of the samples in experimental and control group. Majority were belongs to 18-19 years in both groups. [(Experimental group: 67.50%, control group: 52.50%)].
- With regards to marital status majority of the samples were unmarried samples both the group. [(Experimental group: 60.00%, control group: 72.50%)]
- With regards to place of domicile, majority of samples were belongs to rural area in both the groups. [(Experimental group: 62.50%, control group: 60.00%)]
- With regards to Father's education, majority of samples were metric education in both groups. [(Experimental group: 30.00%. Control group: 65.00%)]
- With regards to Mother's education, majority of samples were belongs to illiterate in experimental group, where in control group majority of samples had metric education. [(Experimental group: 40.00%. Control group: 50.00%)]
- With regards to Family income's (Rupees), majority of samples had income less than Rs10, 000/month in both groups. [(Experimental group: 40.00%, Control group: 42.50%)]
- With regards to Father's occupation, majority of the samples were farmer in both groups. [(Experimental group: 55.00%, Control group: 32.00%)]
- With regards to Mother's occupation, majority of samples were home maker in both groups. [(Experimental: 95.00%, Control group: 90.00%)]

### **Conclusion**

A quasi experimental study to evaluate the effectiveness of information education and communication package regarding the knowledge and attitude on biomedical waste management among the GNM 1<sup>st</sup> year students in selected schools, of district Sonapat, Haryana. The finding of the study revealed that the Information Education and communication package was more effective in improving the knowledge and attitude of the GNM 1<sup>st</sup> year students regarding bio medical waste management. There was no association

between pre test knowledge score, pre test attitude score with selected socio demographic variables in experimental group. Bio medical waste management was effective for hospital use as well as for students. As a health care professional we are in the position to educate the GNM 1<sup>st</sup> year students and thereby to adopt good and healthy practice.

**Implications:** The study has many implications in the field of nursing. This include, nursing practice, nursing education, nursing administration and nursing research.

### **Implications for Nursing Practice:**

- Nursing students should understand the importance of different color coding system, categories, technique of waste management etc which they can use effectively and independently.
- GNM students after completing their studies at the time of working in the hospitals. They will possess adequate knowledge about bio medical waste management.
- Intensive training programs at regular time interval for all the staff with special importance to the new comers.
- Need for orientation programs for newcomers to understand the hospital function.

### **Implications for Nursing Education:**

- The students should be taught in detail about the all aspect of bio medical waste management to impart education for nurses in hospital and as well as in community in order to reduce mortality and morbidity and improve the management outcome.
- Education programme help's community health nurse and primary health nurse to gain knowledge about bio medical waste management and disposal of waste properly, so different education programmes should be conducted in different setting.

### **Implications for Nursing Research:**

- Nurse researcher must know the cause of improper bio medical waste management.
- The health care environment today is dynamic and more demanding. There is a need to promote research based practice on bio medical waste management and use of evaluative method to major outcome.

### **Implications for Nursing Administration:**

- Health administrator should make the education department aware about the prevailing health problems and should assign the staff to conduct health teaching related to bio medical waste management.
- Nurse administrator can assess the practice of staff nurses regarding bio medical waste management.

### **Limitations:**

- Knowledge of GNM students are assessed only through the self structured questionnaire.
- The study was done by means of quasi experimental method.
- The study was limited to GNM 1<sup>st</sup> year students only.
- Small sample was limited to 80 only.

**Recommendations for Further Study::** The present study was conducted on smaller samples, a more extensive study on large samples is recommended for wider generalization.

- A comparative study can be done among GNM and B.Sc students in different setting.
- A similar study was being conducted with an experimental research approach and pre test and post test control group design.
- A true experimental study can be done among GNM students to evaluate the effectiveness of information education and communication package on knowledge, attitude and practice on bio medical waste management.
- A longitudinal study can be conducted to see the impact of Information education and communication package on bio medical waste management.
- A study can be done to assess the acceptability of nursing staff regarding the information education and communication package on bio medical waste management.
- A cross sectional study to assess the effectiveness of information education and communication package on bio medical waste management among the interns.

**Ethical Clearance:** Taken from Research Committee.

**Source of Funding:** Self

**Conflict of Interest:** Nil

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