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Effectiveness of Planned Teaching Programme (PTP) on Knowledge Regarding Biomedical Waste Management among Health Team Members in SCPM Hospital at Gonda

Rajimol D

Assistant Professor, Sainik College of Nursing, Tajopur, Mau, UP., India

Naveena J.H, Associate Professor, Amity College of Nursing, Amity University, Gurugram, Haryana, India
Corresponding Author Email id: jhnaveen[at]gmail.com

Abstract: ***Background: In recent years, bio-medical waste treatment has mainly emerged as an important concern from an environment point of view. But the bio-medical waste generated from hospitals depends on various factors like availability of infrastructure and resources, types of health care units and reusable items used in hospitals etc. However, the impact of bio-medical waste on the environment, human beings, and flora fauna has raised concerns worldwide.[4]In India 1.5kg/bed/day of waste are generated. Till now the hospital waste is not being "managed "it was simply disposed. WHO says that more than 50.0000 people die every day from infectious diseases. One of the causes for the increase in infectious disease is improper waste management. Blood, body fluids and body secretions which are constituents of biomedical waste harbours most of the viruses, bacteria and parasites that causes infections. HIV and hepatitis viruses spread head an extensive list of infection and disease documented to have spread through biomedical waste. Objectives of the study are to assess the knowledge of health team members regarding biomedical waste management by using a structured knowledge questionnaire among health team members in SCPM hospital at Gonda, UP. Methods and materials: An experimental study was conducted to assess the effectiveness ofplanned teaching programme (PTP) on knowledge regarding biomedical waste management among health team members. the research design was pre-experimental one group pre-test post-test design and non-probability purposive sampling method was used for the selection of samples. The instrument for the data collection was Knowledge questionnaire on Biomedical waste management among Health team members who are working in SCPM Hospital at Gonda. Results: The comparison of Knowledge on biomedical waste management before & after P.T.P shows that on an average health team members improved their knowledge from 19.1 to 25.4 after PTP. The difference between pre- and post- test Knowledge score is t=13.388 P=0.05 and it was significant. Overall 21 percent of Knowledge gain is the net benefit of this study, which indicates the effectiveness of P.T.P. There was no significant association between the findings of Knowledge with demographic variables estimated by chi-square (χ2) test. Conclusion: The major findings indicated that health team members had inadequate Knowledge so planned teaching programme was found to be a very effective method of providing information.***

Keywords: Effectiveness Planned teaching programme, Knowledge, Biomedical waste management, Health team members

1. Introduction

Over the past two decades, the management of waste poses to be a major problem in most of the countries. In recent years, medical waste disposal has posed even more difficulties with the appearance of disposable needles, syringes, and other similar items. India has also been facing this problem. If hospital waste is not managed properly it proves to be harmful to the environment. It not only poses threat to the employees working in the hospital, but also to the people surrounding that area. Infectious waste can cause diseases like hepatitis A & B, AIDS, Typhoid, Boils, etc.[1]

Bio-Medical Waste means any waste which is generated during the diagnosis, treatment or immunization of human beings or in research activities or in the production or testing of biological and including categories mentioned in the schedule one of Bio-Medical Waste rules 2000 by Ministry of Environment and Forest notification.[2]

Hospital is a place of almighty, a place to serve the patient. Since beginning, the hospitals are known for the treatment of sick persons but we are unaware about the adverse effects of the garbage and filth generated by them on human body and environment. Now it is a well-established fact that there are many adverse and harmful effects to the environment including human beings which are caused by the "Hospital waste" generated during the patient care. Health personnel should serve as a spring board to renewed activities for the health and happiness of humanity. All human activities produce waste. We all know that such waste may be dangerous and needs safe disposal. Industrial waste, sewage and agricultural waste pollute water, soil and air; it can also be dangerous to human beings and environment. Similarly, hospitals and health care facilities generate 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.[3]

Careless and indiscriminate disposal of these wastes by the health-care establishments and research institution can contribute to the spread of serious life-threatening diseases like hepatitis and AIDS among those who handle it and the general public. Hence the health team members should be aware of Bio Medical Waste management for their thoughtful precaution in practice, careful management of health and safety, there by ensure that the health care setting are cleaner, safer and healthier for population they care for.[6]

Problem Statement

"A study to assess the effectiveness of planned teaching programme (PTP) on knowledge regarding biomedical waste management among health team members in SCPM College of Nursing at Gonda."

Objectives of the Study

1) To assess the knowledge of health team members regarding biomedical waste management by using a structured knowledge questionnaire.
2) To evaluate the effectiveness of planned teaching programme (PTP) regarding biomedical waste management in terms of gain in the mean post-test knowledge scores.
3) To find the association between the pre-test knowledge score with selected demographic variables.

2. Methodology

A pre-experimental single group pre-test post-test design was used to assess the effectiveness of PTP on Bio medical waste management among Health team members in SCPM Hospital, Gonda, UP. The sample consisted of 50 Health team members who are available at the time of study. Non probability convenient sampling method was used for the selection of samples. The instrument for the data collection was a structured questionnaire. It has two parts: PART A: Consists of socio –demographic data. PART B: Consists of 30 items (structured questionnaire) to assess the Knowledge regarding Bio medical waste management among Health team members.

The data obtained was analyzed by using descriptive and inferential statistics in terms of frequency, percentage, mean, standard deviation, paired' test and Chi-square test. The anonymity and confidentiality of the study subjects was maintained throughout the study.

3. Results

Table 1: Demographic Profile, N=50

Demographic variables		No. of health team members	Percentage %
Age	20-25 years	20	40.0%
	26-30 years	15	30.0%
	31-35 years	10	20.0%
	36 and above	5	10.0%
Gender	Male	35	70.0%
	Female	15	30.0%
Religion	Hindu	40	80.0%
	Muslim	6	12.0%
	Christian	4	8.0%
	Any other	0	0.0%
Education status	Class X	0	0.0%
	Class XII	0	0.0%
	Diploma	30	60.0%
	Degree	20	40.0%
	Post graduation	0	0.0%
Profession	Lab technician	10	20.0%
	Staff nurses	10	20.0%
	Health Assistant	20	40.0%
	Health worker	10	20.0%
Year of Experience	1-3 Years	25	50.0%
	3-5 Years	10	20.0%
	5-7 Years	7	14.0%
	7-9 years	5	10.0%
	9 Years and above	3	6.0%
Inservice ecucation programme	Yes	30	60.0%
	No	20	40.0%
Source of information	Workshop	35	70.0%
	Newspaper and books	10	20.0%
	Internet	5	10.0%
	Short certificate course	0	0.0%
	If Any other specify	0	0.0%

Table No.1 shows the Socio-demographic information of the health team members who are working in SCPM Hospital, Gonda and who participated in the study.The Socio-demographic variable related to age indicates that majority 40% of health team members were of aged between 20- 25 years, 30% of health team members were of aged between 26- 30 years, 20% of health team members were of aged between 31-35 years and remaining 10% of them were aged above 36 years. Related to gender indicates that 70% of health team members were male and 30 % of them were female.Related to religion indicates that 80% of health team members were belongs to Hindu religion, 12% of health team members were belongs to Muslim religion and 8 % of them were belongs to Christian religion.The Socio-demographic variable related to education indicates that Maximum 60% of health team members were had diploma education where as 40% were had degree.Related to profession shows that majority (n=40%) were health assistant, 20% were lab technicians, 20% were staff nurses and remaining 10 % were health worker.Related to experience shows that majority (n=50%) were having 1-3 years of experience, 20% were having 3-5 years of experience, 14% were having 5-7 years of experience, 10% were having 7-9 years of experience and remaining 6 % were having above 9 years of experience.

Table 2: Pre-Test Knowledge Score on Different Aspects of biomedical waste management, N=50

Knowledge	Pre-test Knowledge	
	Mean score	%
Questionnaire Regarding Introduction to Bio medical waste management	9.3	51.6 %
Questionnaire Regarding discarding /disposal of biomedical waste	7.5	62.5 %
OVER ALL	19.1	63.6 %

Interpretation

The above table showed that assessment of Knowledge of health team members in terms of pre-test scores regarding various biomedical waste management. In introduction with a mean score of 9.3 and 51.6 %. In disposal of biomedical medical waste with a mean score of 7.5 and 62.5 %.

Table 3: Pre Test Overall Knowledge Score on biomedical waste management, N=50

Questions	Mean ± SD	% of Knowledge
Overall pre-test Knowledge	19.1± 3.412	63.6 %

Table no.3 shows the pre-test overall Knowledge on biomedical waste management. They are having 63.6 % of Knowledge before the administration of planned teaching programme.

Table 4: Pre Test Level of Knowledge Score on biomedical waste management N=50

Level of Knowledge	No. of frequency	Percentage
Inadequate Knowledge	6	12%
Moderately adequate Knowledge	35	70 %
Adequate Knowledge	9	18 %
Total	**50**	**100%**

Table no.4 shows the pre-test level of Knowledge on biomedical waste management. In pre-test 12% of the health team members are having inadequate Knowledge and 70 % of them having moderately adequate Knowledge and 18 % of them having adequate Knowledge.
<= 50% = Inadequate, 51-75% = Moderate, >75% = Adequate

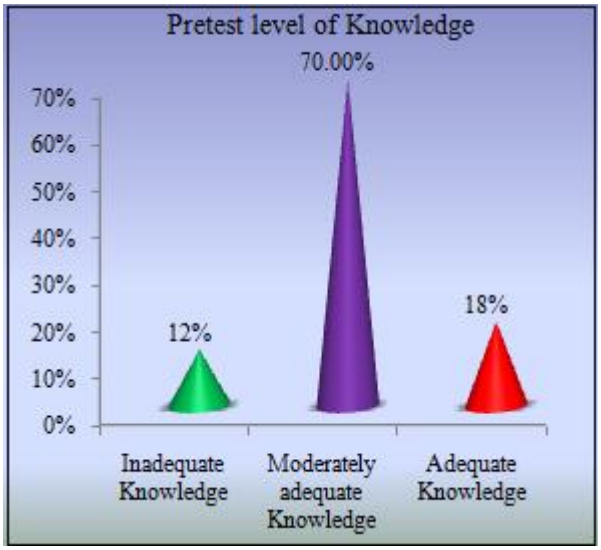

Figure: 1: Conical Diagram Depicts the Pretest Level of Knowledge

Table 5: Post Test Knowledge Score on Different aspects of biomedical waste management, N=50

Knowledge	Pre-test Knowledge	
	Mean score	%
Questionnaire Regarding Introduction to Bio medical waste management	14.7	81.6 %
Questionnaire Regarding discarding/ disposal of biomedical waste	10.2	85 %
OVER ALL	25.4	84.6 %

The above table showed that assessment of Knowledge of health team members in terms of post-test scores regarding biomedical waste management. In introduction with a mean score of 14.7 and 81.6 %. In disposal of biomedical medical waste with a mean score of 10.2 and 85 %.

Table 6: Post Test Overall Knowledge Score on biomedical waste management N=50

Questions	Mean ± SD	% of Knowledge
Overall post-test Knowledge	25.4 ± 2.08	84.6

Table no.6 shows the post-test overall Knowledge on biomedical waste management. They have shown 84.6 % percent of Knowledge after the administration of P.T.P.

Table 7: Post Test Level of Knowledge on biomedical waste management N-50

Level of Knowledge	No. of Frequencies	Percentage
Inadequate Knowledge	0	0.0 %
Moderately adequate Knowledge	0	0.0 %
Adequate Knowledge	50	100.0 %
Total	**50**	**100%**

Table no.7 shows post-test level of Knowledge on biomedical waste management. In post-test 100 % of health team members are having adequate Knowledge and none of them having moderately adequate Knowledge and none of them having inadequate Knowledge.<= 50% = Inadequate, 51-75% = Moderate, >75% = Adequate

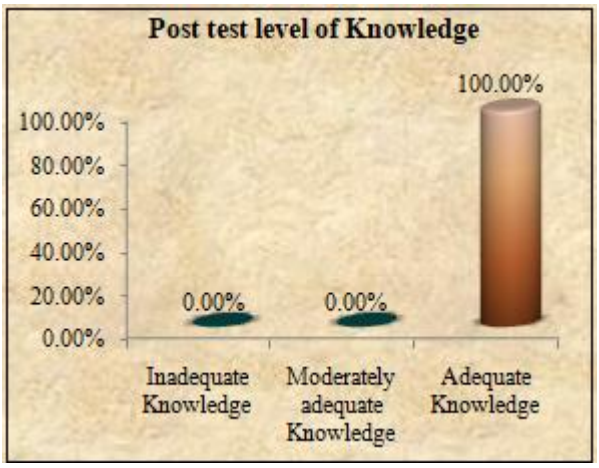

Figure 2: Simple Cyclindrical Diagram Showing Post Test Level of Knowledge

Table 8: Comparison of Pre-Test and Post-Test knowledge score on biomedical waste management before and After Administration of P.T.P, N=50

Knowledge	Pre-test		Post-test		Student's paired t-test
	Mean	SD	Mean	SD	
Questionnaire Regarding Introduction to Bio medical waste management	9.3	3.06	14.7	2.46	t= 10.280 P= 0.05, Significant
Questionnaire Regarding discarding/disposal of biomedical waste	7.5	2.77	10.2	2.27	t= 7.841 P= 0.05, Significant
OVER ALL	19.1	3.412	25.4	2.08	t=13.388 P= 0.05, Significant

The above table no.8 shows the comparison of Knowledge on biomedical waste management before & after P.T.P. In all the aspects, health team members improved their Knowledge after the administration of P.T.P. The difference between pre and post- test Knowledge score is large and it is significant. Statistical significance was calculated by using student's paired 't' test.

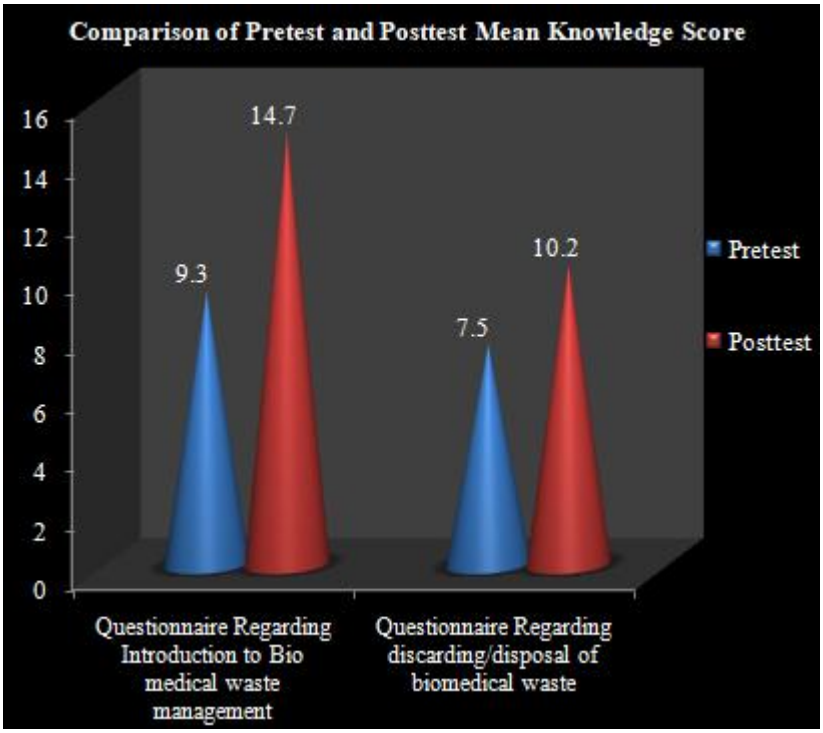

Figure 3: Conical Diagram Showing Comparison of Pre-Test A and Post-Test Knowledge Score

Table 9: Determination of Overall Mean Knowledge Score before and After P.T.P, N=50

	No. of health team members	Pre-test Mean±SD	Post-test Mean±SD	Student paired t-test
Overall, Knowledge score	50	19.1± 3.412	25.4±2.08	13.388

Table no 9 shows the comparison of overall Knowledge of health team members before & after PTP. On an average health team members improved their knowledge from 19.1 to 25.4 after PTP Or we can say, in pre-test they are able to answer only 19.1 questions before PTP, after PTP they are able to answer up to 25.4 questions, total questions were 30. The difference between pre and post- test Knowledge score is t=13.388 P=0.05 and it was significant. Statistical significance was calculated by using student's paired 't' test.

Table 10: Knowledge Gain after P.T.P, N=50

Knowledge assessment	% of Pre-test Knowledge	% of Post-test Knowledge	% of Knowledge gain
Questionnaire Regarding Introduction to Bio medical waste management	51.6 %	81.6 %	30 %
Questionnaire Regarding discarding/disposal of biomedical waste	62.5 %	85 %	22.5 %
Overall	63.6 %	84.6 %	21 %

The above table no.10 shows the comparison of Knowledge on biomedical waste management before & after P.T.P. In all the aspects, health team members improved their Knowledge after the administration of P.T.P. The health team members gained the maximum Knowledge on introduction 30 % and minimum Knowledge on disposal of biomedical waste with 22.5%. Overall 21 percent of Knowledge gain is the net benefit of this study, which indicates the effectiveness of P.T.P.

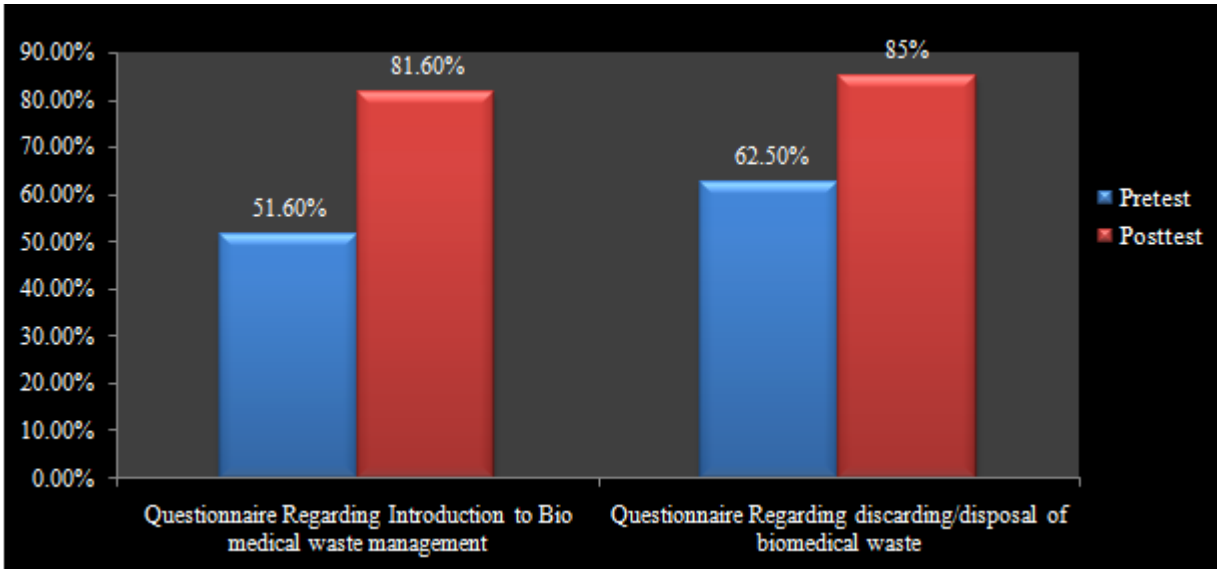

Figure 4: Multiple Bar Diagram Indicates the Distribution of Pre Test and Post Test Knowledge Scores

Table 11: Association between Pre-Test Level of Knowledge and their Demographic Variables, N=50

Demographic variables		Inadequate		Moderate		Adequate		Total	Pearson chi-square
		N	%	N	%	N	%		
Age	20-25 years	2	10.0%	13	65.0%	5	25.0%	20	χ2= 5.81 P= .444 Df= 6 Not significant
	26-30 years	3	20.0%	11	73.3%	1	6.7%	15	
	31-35 years	0	0.0%	7	70.0%	3	30.0%	10	
	36 and above	1	20.0%	4	80.0%	0	0.0%	5	
Gender	Male	5	14.3%	24	68.6%	6	17.1%	35	χ2= 0.590 P=. 745 Df= 2, Not significant
	Female	1	6.7%	11	73.3%	3	20.0%	15	
Religion	Hindu	5	12.5%	28	70.0%	7	17.5%	40	χ2= 2.825 P=. 588 Df= 4 Not significant
	Muslim	0	0.0%	4	66.7%	2	33.3%	6	
	Christian	1	25.0%	3	75.0%	0	0.0%	4	
Education status	Diploma	5	16.7%	20	66.7%	5	16.7%	30	χ2= 1.554 P=. 460 Df= 2, Not significant
	Degree	1	5.0%	15	75.0%	4	20.0%	20	
Profession	Lab technician	0	0.0%	6	60.0%	4	40.0%	10	χ2= 5.909 P=. 433 Df= 6 Not significant
	Staff nurses	2	20.0%	7	70.0%	1	10.0%	10	
	Health Assistant	3	15.0%	15	75.0%	2	10.0%	20	
	Health worker	1	10.0%	7	70.0%	2	20.0%	10	
Experience	1-4 Years	3	12.0%	17	68.0%	5	20.0%	25	χ2= 5.798 P=. 670 Df= 8 Not significant
	3-6 Years	2	20.0%	7	70.0%	1	10.0%	10	
	5-8 Years	0	0.0%	6	85.7%	1	14.3%	7	
	7-9 years	0	0.0%	3	60.0%	2	40.0%	5	
	9 Years and above	1	33.3%	2	66.7%	0	0.0%	3	
Inservice ecucation programme	Yes	5	16.7%	20	66.7%	5	16.7%	30	χ2= 1.554 P=. 460 Df= 1, Not significant
	No	1	5.0%	15	75.0%	4	20.0%	20	
Source of information	Workshop	5	14.3%	24	68.6%	6	17.1%	35	χ2= 3.415 P=.491 Df= 1 Not significant
	Newspaper and books	0	0.0%	7	70.0%	3	30.0%	10	
	Internet	1	20.0%	4	80.0%	0	0.0%	5	

Table no 11 shows the association between socio-demographic variables and the pre-test level of Knowledge. There is no significant association between selected demographic variables with the pretest level of knowledge.

4. Nursing Implications

The findings of the study have implications on the field of nursing education, nursing practice, nursing administration and nursing research.

1) Nursing practice

Nurses are the key persons of the health team, who play a major role in health promotion and maintenance. The nursing personnel need to prepare instructional material which should be simple, clear and understandable that can be studied at their own with other health team members. Health teaching is an integral part of community health services and community. The nurses have a major role in helping the fellow health team members regarding prevention of Bio medical waste hazard and motivating for effective BMW Management.

2) Nursing Education

As a nurse educator, there are abundant opportunities for nursing professionals to educate the health team members regarding the Bio medical waste management. The study emphasizes significance of short term in- service education programme for nurses and other health team members related to health education regarding Bio medical waste

management. Nursing personnel working in special care setting and in community areas should be given in-service education.

3) Nursing administration.

Nursing administrators should take interest in motivating the nursing personnel especially nurses in various hospitals and in community setting to improve their professional knowledge and skill by attending the health conference, workshops, seminars and training program on Bio medical waste management. Necessary administration support should be provided to conduct several activities.

4) Nursing research

Research provides nurses credibility to influence decision making, policy and protocol formulation regarding Bio medical waste management. Findings of the present study suggest that educators and administrators should encourage nurses to read, discuses and conduct research studies so as to enable the nurse to make data based decision and health teaching rather than intuitive decisions.

5. Conclusion

The findings of this study support the need for Health team members to understand regarding the various aspects of Bio medical waste management and to utilize this Knowledge in their day to day services. This study has proved that the health team members have a remarkable increase in the Knowledge regarding Bio medical waste management after planned teaching programme when compared to their previous Knowledge, prior to the implementation of the planned teaching programme. Thus, for the future outlook there is a need to improve their knowledge by conducting the teaching and demonstration programmes on Bio medical waste management.

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