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Research article

Study to assess the effectiveness of information booklet on biomedical waste management in terms of knowledge and practice among paramedical personnel at selected hospitals of distt. fatehabad (Haryana)

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Abstract

Introduction Biomedical waste is the major health problem/hazards to the community & healthcare team itself. The perpetual increases in the generation of waste from the health care settings and its improper disposal have drawn the attention of environmentalists, the media, and the public. It is the duty of entire healthcare establishments to ensure speedy recovery of their patients by maintaining clean and infection free surroundings. Basic sanitation and cleanliness have always been mandatory requirements in the health care establishments; collection and disposal of biomedical waste, often ignored are directly responsible for the spread of disease in the community specifically among healthcare personnel. AIM-The aim of the study is to determine the effectiveness of Information Booklet on knowledge regarding Bio-Medical Waste Management in terms of gain in knowledge score and practice score among the paramedical Personnel. **Material and methods:** A pre-experimental one-group pre-test post-test research approach was used to conduct this research study. A sample of 200 paramedical personnel as subjects selected from various hospitals of Distt. Fatehabad of Haryana using Simple Random Sampling technique. **Result**- The Study articulated that the overall post-test mean with SD (24.96±6.21) was higher than pre-test mean with SD(17.19±5.11) with a mean difference of 7.77. 't' value was computed to find the level of significance between the means and it was observed highly significant ('t'_{199}=34.07) at $p<0.05$. **Conclusion**: This result reveals that the planned teaching programme was effective in increasing the knowledge and practice of the paramedical personnel regarding Biomedical Waste Management.

Key words: Biomedical waste management, information booklet, paramedical personnel.

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1. Introduction

"Let the wastes of the sick not contaminate the lives of the healthy" [1]

Healthcare personnel including doctors, nurse, and paramedical staffs are the guardians of the community. It is the duty of entire healthcare establishments to ensure speedy recovery of their patients by maintaining clean and infection free surroundings. Basic sanitation and cleanliness have always been mandatory requirements in the health care establishments; collection and disposal of biomedical waste, often ignored are directly responsible for the spread of disease in the community specifically among healthcare personnel. Between 75-90 percent of waste produced by the health care providers is non-risk.

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The remaining 10-25 percent health care waste is regarded as hazardous and may create various health risks. The healthcare waste is the leftover of the enormous variety of items consumed during the delivery of patient care in a hospital, which amounts to approximately 2-2.5 kg/ bed/day. This includes general waste, which is non-infectious, as well as bio-medical waste, which is infectious. [2]

Biomedical waste is the major health problem/hazards to the community & healthcare team itself. The perpetual increases in the generation of waste from the health care settings and its improper disposal have drawn the attention of environmentalists, the media, and the general public. From the time of Florence Nightingale Environment is the key concept of health, we started providing the conducive environment to the clients but forgetting or neglecting waste generated from client care. Paramedical Personnel plays a vital role in the hospitals and who need to have knowledge on Biomedical Waste Management, because they should identify different categories of waste, segregate and to collect at the point of segregation itself. This helps in the ability to protect them and the others, the whole community through a safe environment.[3]

A pre-experimental one group pre-test and the post-test study were conducted by Simple M to determine the effectiveness of SIM on biomedical waste management. Thirty staff nurses were selected using the multistage random technique. The findings of the study revealed that majority of the nursing personnel [90%] had average knowledge score in the pre-test. The mean percentage of knowledge scores in the post-test was high [84.39%] compared to the mean pre-test knowledge scores [50.29%]. There was a significant difference between pre-test and post-test knowledge scores [p=0.05]. It was found that there was no significant association between pre-test knowledge scores and selected demographic variables. The study concluded that the majority of the nursing personnel [90%] had average knowledge regarding biomedical waste management in the pre-test whereas 93.33% of nursing personnel had good knowledge level in post-test. [4]

A study was conducted By Om Nandal to evaluate the effectiveness of information booklet on Bio-Medical waste management in terms of knowledge and practice of 100 Nursing personnel working in Pt. B. D. Sharma PGIMS, Rohtak (Haryana). The pre-experimental research design was adopted. Only I% subjects had adequate knowledge and 80% subject were having moderately adequate knowledge in the pre-test. Maximum subjects (79%) had moderate practice score, 8% subjects had inadequate practice score and only 13% study subjects were doing adequate practice in the pre-test. The mean percentage of post-test knowledge scores (82.2%) were significantly higher than mean percentage of pretest knowledge scores i.e. 58.2% ('t'=30.04 at $p<0.05$ level). Hence the information booklet is instructionally effective, appropriate and feasible & can be used to improve knowledge and practice.

An experimental study was conducted to assess the effectiveness of an information booklet on biomedical waste management among 32 nurses in selected hospitals at Delhi. Data were collected by observation and questionnaire method. The result showed the post-test knowledge scores were signification higher than pre-test scores. The highest percentage (55%) of effectiveness was noted in the area of 'safety practices'. The information booklet was found highly useful. [5]

Thus this status indicates that still there is need to improve the knowledge and practice of paramedical personnel regarding biomedical waste management

Objectives of the study

- To assess the existing level of knowledge of the paramedical personnel regarding Biomedical Waste Management.
- To determine the effectiveness of Information Booklet on knowledge regarding Bio-Medical Waste Management in terms of gain in knowledge score among the paramedical Personnel.
- To determine the effectiveness of Information Booklet on knowledge regarding Bio-Medical Waste Management in terms of gain in practice score among the paramedical Personnel.

Hypotheses

H_1-There will be a significant difference in knowledge score among paramedical staff personnel after providing Information Booklet on biomedical waste management at 0.05 level of significance.

H_2-There will be a significant difference in practice score among paramedical staff personnel after providing Information Booklet on Biomedical waste management at 0.05 level of significance.

Assumptions

1. Paramedical personnel will have some knowledge regarding proper disposal of biomedical wastes. Hospital-acquired infections and needle pricks injuries will be prevented with the safe practice of biomedical waste management.
2. A paramedical personnel is very important in health care team for the proper management of biomedical wastes.
3. Knowledge and practice regarding management of biomedical waste will be influenced by reading Information Booklet

2. Materials and methods

The present study was conducted to assess the effectiveness of Information Booklet on knowledge

regarding Bio-Medical Waste Management among paramedical personnel in Selected Hospitals of Distt. Fatehabad (Haryana). Pre Experimental (One Group Pretest-Posttest) research design was used in the study using simple random sampling technique and the sample size was 200. Data was collected by structured knowledge questionnaire regarding knowledge of Bio-Medical Waste Management among paramedical personnel in Selected Hospitals of Distt. Fatehabad (Haryana) in the month of January and February 2017. Descriptive and inferential statistics were employed to analyze the data.

Table No 1: Description of frequency and percentage distribution of sample characteristic

SN			Demographic variables	Frequency	%
1.	Age (in years)	a.	21-30	25	12.5
		b.	31-40	73	36.5
		c.	41-50	62	31
		d.	51 and above	40	20
2.	Gender	a.	Male	170	85
		b.	Female	30	15
3.	Marital status	a.	Married	200	100
		b.	Unmarried	0	0
4.	Academic qualification	a.	Metric	75	37.5
		b.	Senior secondary	75	37.5
		c.	Graduate	40	20
		d.	Post graduate	10	5
5.	Category with they belong	a.	Radio technician	50	25
		b.	Pharmacist	25	12.5
		c.	Ot –technician	50	25
		d.	Lab – technician	75	37.5
6.	Affiliation to any research network	a.	No	200	100
		b.	National network	0	0
		c.	Regional network	0	0
		d.	International network	0	0
7.	Professional experience (in years)	a.	1-10	37	18.5
		b.	11-20	63	31.5
		c.	21-30	65	32.5
		d.	>31	35	17.5
8.	Attended any formal education on BMW	A	Yes	10	5
		B	No	190	95M
9.	Is he/she member of any organization	A	Yes	171	85.5
		B	No	29	14.9

3. Results

The Study articulated that the overall post-test mean with SD(24.96±6.21) was higher than pre-test mean with SD(17.19±5.11) with a mean difference of 7.77. 't' value was computed to find the level of significance between the means and it was observed highly significant ('t'$_{199}$=34.07) at p<0.05. This result reveals that the planned teaching programme was effective in increasing the knowledge of the paramedical personnel regarding Biomedical Waste Management.

Table No. 2: Description of the pre-test and post-test values of mean, SD with t-value for knowledge

Group	Mean	SD	Mean difference	`t' value	Df	Significance / Not significant
Pre-test (n=200)	17.19	5.11	7.77	34.07	199	HS <0.05
Post-test (n=200)	24.96	6.21				

The Study articulated that the overall post-test mean with SD(11.71±2.79) was higher than pre-test mean with SD(7.26±2.15) with a mean difference of 4.45. 't' value was computed to find the level of significance between the means and it was observed highly significant ('t'$_{199}$=45.76) at p<0.05. This result reveals that the planned teaching

programmed was effective in increasing the practice of the paramedical personnel regarding Biomedical Waste Management.

Table No. 3: Description of the pre-test and post-test values of mean, SD with t-value for practice

Group	Mean	SD	Mean difference	`t' value	Df	Significance / Not significant
Pre test (n=200)	7.26	2.15	4.45	45.76	199	Highly significant at 0.05 level
Post test (n=200)	11.71	2.79				

Table No. 4: Comparison of mean pre-test and post-test knowledge scores

Level of knowledge	Pre-test		Post-test	
	Frequency	%	Frequency	%
Adequate (21-30)	.....	.....	107	53.5
Moderate (11-20)	72	36	93	46.5
Inadequate (1- 10)	128	64	…….	…….

Table No. 5: Comparison of mean pre-test and post-test practice scores

Level of Practice	Pre-test		Post-test	
	Frequency	%	Frequency	%
Adequate (21-30)	.....	.....	49	24.5
Moderate (11-20)	107	53.5	151	75.5
Inadequate (1- 10)	93	46.5	…….	…….

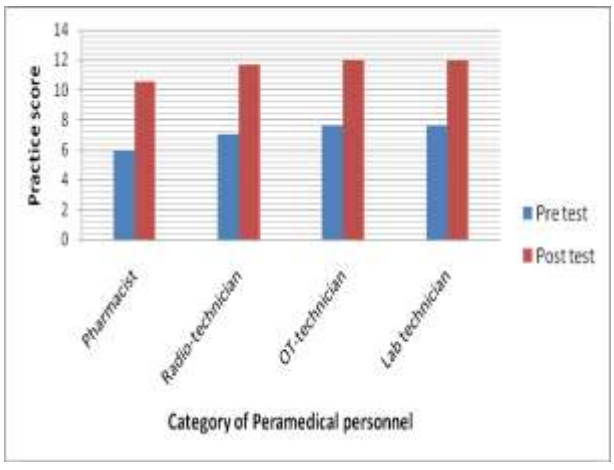

Figure No. 1: Showing the effectiveness of information booklet on knowledge in different categories

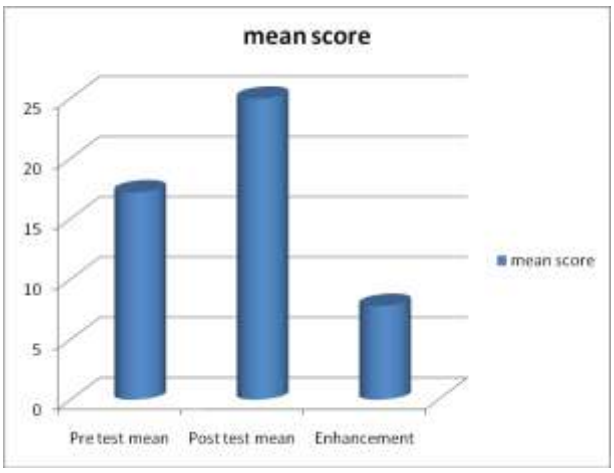

Figure No.2: Showing the pretest mean, post-test mean and enhancement in knowledge scores.

4. Discussion

The main findings of this study were 62% of the sample were in the age group of 41-50 years and 20% in the age group above 51 years, 12.5% in the age of 21-30years, 36.5% in age group of 31-40. Majority of the sample (85%) were male and 15% were female. Majority of the sample (100%) were married. Majority of the sample were educated up to class senior secondary (37.5%), 37.5% were educated to metric, 20% were graduate and only 5% were Postgraduate. With regards to occupation, 50(25%) were Radio technician, 25(12.5%) were Pharmacist, 50(25%) were OT-technician and 75(37.5%) were Lab-technician.None of them had affiliated with any research network. In term of the professional experience, 37(18.5%) were having 10 years experience, 63 (31.5%) were having 11-20 years experience, 65(32.5%) were having 21-30 years experience and 35(17.5%) were having more than 31 years experience. In regards to education programmed attended, only 5% not attended any BMW formal education and 95% had not attended any educational programmed.Majority of the sample (85.5%) was a member of the organization and 14.5% were not a member of any organization.The mean post-test knowledge score 24.96 was higher than the mean pre-test knowledge score 17.19 suggested that information booklet helped in improving the knowledge of paramedical personnel regarding biomedical waste management. The mean difference between the post-test

and pre-test knowledge scores of paramedical personnel was found to be highly significant 7.77 with paired't' test (t_{199} =34.07, $p<0.05$).Research hypothesis H_1 was accepted. The mean post-test practice score 11.71 was higher than the mean pre-test practice score 7.26 suggested that information booklet helped in improving the practice of paramedical personnel regarding biomedical waste management. The mean difference between the post-test and pre-test knowledge scores of paramedical personnel was found to be highly significant 4.45 with paired't' test (t_{199} =45.76, $p<0.05$).Research hypothesis H_2 was accepted. Findings in the present study revealed that the information booklet was effective in increasing the knowledge and practice of the paramedical personnel regarding biomedical waste management. The result of the study is supported by A study was conducted by Chitra TM Department of community medicine, has conducted a cross-sectional study on hospital waste management practice at Victoria Hospital Bangalore City. The aim of the study was to assess the knowledge regarding Biomedical Waste Management among all health care members. 91% of healthcare personnel were not trained showing their poor level of knowledge regarding color code used for different categories and their methods of disposal. Majority 55% were not using protective devices. Even study reveals that there is a need for improvement which can be started from the basic level of periodic training of health personnel by strengthening knowledge and practice. [6]

The study was conducted by Kishore Jugal et al (2003) on the role of an information booklet on biomedical waste management among nurse. The objectives of the study were to assess the knowledge and practice of nurses in biomedical waste management before and after administration of information booklet. In the study pre-experimental design used, the study was less than half to staff nurses were aware of various risks and methods of treatment and disposal of biomedical waste. The post-test knowledge score was significantly higher than pretest knowledge score, so information booklet can be given along with the training programmed. [7]

One group pre-test and the post-test study were conducted by Singh et.al on the effectiveness of an information booklet on biomedical waste management among 32 nurses at selected hospitals in New Delhi. The Reliability coefficient for the structured questionnaire was calculated by KR-20 formula and was found to be 0.95 indicating high reliability. It was observed that less than half of the staff nurses were aware of various risks about the disposal of waste. Post-test knowledge scores were significantly higher than the pre-test. Highest percentage [55%] of effectiveness was noted in the area of safety practices and lowest percentage [35%] of effectiveness in the area of hazards of biomedical waste management. The researcher concluded that the information booklet was found highly acceptable and useful by nursing personnel. [8]

Conclusion

A Study was conducted to assess the effectiveness of Information Booklet on Biomedical Waste Management in terms of knowledge and practice among paramedical personnel at Selected Hospitals of Distt. Fatehabad (Haryana). The mean difference between the post-test and pre-test knowledge scores of paramedical personnel was found to be highly significant 7.77 with paired 't' test (t_{199} =34.07, $p<0.05$) and the mean difference between the post-test and pre-test practice scores of paramedical personnel was found to be highly significant 4.45 with paired 't' test (t_{199} =45.76, $p<0.05$).The result of the study shows that the information booklet helps in increasing the knowledge and practice of paramedical personnel regarding biomedical waste management.

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