



“ASSESS THE KNOWLEDGE AND PRACTICE REGARDING BIOMEDICAL WASTE MANAGEMENT AMONG HEALTH CARE WORKERS”

Nursing

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ABSTRACT

Biomedical waste is any waste, which is generated during the diagnosis, treatment or immunisation of human beings or animals, or in research activities pertaining thereto, or in the production or testing of biologics. The main aim of the study was to assess the knowledge and practice of health care workers regarding bio- medical waste management. The setting of the study is at Narayan Medical College and Hospitals, Sasaram, Rohtas. The objectives of the study were to assess the knowledge score and practice and to find out the association between knowledge & practice of health care workers with the selected demographic variables. The methodology used for the study was Descriptive survey approach. Samples and Sample Size were 60 health care workers with convenient sampling techniques. 7 sociodemographic data and 30 self-structured questionnaires were used as the instrument to data collection. Data was analyzed and interpreted on the basis of Descriptive (frequency, percentage) and inferential (chi square) statistical methods. The findings of the study revealed that majority (35) 58.34% of the study subjects had good level of knowledge followed by (25) 41.67% of them had average knowledge level, whereas none had poor level of knowledge regarding biomedical waste management. And also, the findings of the study revealed that majority (58) 96.67% of the study subjects had adequate practice followed by (2) 3.33% of them had inadequate practice. An information booklet was provided to all the study subjects with average knowledge score regarding Biomedical waste management. Proper handling, treatment and disposal of biomedical waste are important elements of health care office infection control programme. Correct procedure will help protect health care workers, patients and the local community. The main aim of the study is to provide knowledge and practices regarding bio-medical waste management among health care workers.

KEYWORDS

Bio-medical waste management, knowledge and practice

INTRODUCTION

Biomedical waste is any waste, which is generated during the diagnosis, treatment or immunisation of human beings or animals, or in research activities pertaining thereto, or in the production or testing of biologics. Medical care is vital for our life and health, but the wastes generated from medical activities represent a real problem of living nature. Hospitals are the institutions providing various health care services to the community. Hospital waste is a special category of waste which is highly hazardous due to its infectious or toxic characteristics. Effective management of biomedical waste (BMW) is not only a legal necessity but also a social responsibility.

The waste produced in the course of healthcare activities have higher potential for infection and injury than any injury than any other type of waste. Therefore, it is essential to have safe and reliable method for its handling. Inadequate and inappropriate handling of health care waste may have serious public health consequences and a significant impact on the environment. The waste is potential source of infection transmission. Appropriate management of health care waste needs a crucial component of environment health protection and it should become an integral feature of health care services.^[1]

A major problem related to current Bio-Medical waste management is to be short of knowledge in segregation practices that results in mixing of hospital wastes with general waste thus making the whole waste stream hazardous. Inadequate Bio-Medical waste management may cause environmental pollution, unpleasant smell, growth and multiplication of vectors leads to the transmission of infectious diseases like typhoid, cholera as well as transmission of blood borne diseases like hepatitis and AIDS through injuries from syringes and needle contaminated with human blood.^[2]

One such type of waste is bio-medical waste generated primarily from health care establishments - including hospitals, nursing homes, veterinary hospitals, clinics, general practitioners, dispensaries, blood banks, animal houses and research institutes (Chitnis et al., 2000). Healthcare waste or bio-medical wastes are the creators of external cost or negative externality which may lead to spread of various infectious diseases like - hepatitis, tuberculosis, bronchitis, HIV, etc. (Mohandasundaram, 2003) as well as environmental degradation through production of chemical waste which alters the natural ecological environment of bacteria.^[3]

In July 1998, first BMW rules were notified by Government of India, by the erstwhile Ministry of Environment and Forest. In India, BMW problem was further compounded by the presence of scavengers who sort out open, unprotected health-care waste with no gloves, masks, or shoes for recycling and second, reuse of syringe without appropriate sterilization.^[4]

NEED FOR THE STUDY

Health care workers have to suffer from various types of issues during discarding of the bio-medical waste management. There is risk of infection during handling of waste, segregation of waste and during disposing of the waste. There is lack of facilities for disposal of hospital waste and the improper use of disposing of waste. We have to assess the implementation of educational program on biomedical waste management creates awareness about the health hazards in public, patients, & health workers & to identify the knowledge and practice gaps. The main aim of the study is to provide knowledge and practices regarding bio-medical waste management among health care workers. The awareness and practices of the BMW management varied among nursing personnel and were not found to be satisfactory. For effective implementation of biomedical waste management practices in the hospitals continuous training program is mandatory to improve their knowledge and practice.^[5,6]

PROBLEM STATEMENT

“A study to assess the knowledge and practice regarding biomedical waste management among health care workers in Narayan Medical College and Hospital, Jamuhar, with a view to develop information booklet.”

OBJECTIVES

- 1) To assess the knowledge of health care workers regarding biomedical waste management with the selected demographic variables.
- 2) To assess the practice of health care workers regarding Bio-medical waste management by using an observational checklist with the selected demographic variables.
- 3) To find out the association between knowledge & practice of health care workers with the selected demographic variables.

RESEARCH METHODOLOGY

Research Design

The researchers adopted non experimental descriptive survey research design in this study.

Setting Of The Study

This study was conducted at Narayan Medical College and Hospital (NMCH), Jamuhar, Rohtas, Bihar.

- NMCH has more than 650 beds hospitals
- The hospitals also have its own transportation services to cater the need of patients.
- The institute has an objective to provide affordable medical facilities to the needy and poor masses of in and around nearby districts of Bihar.
- There is approx. 9km distance from the railway station to the NMCH.

Accessible Population

The accessible population of this study was all the health care workers working at NMCH, Jamuhar, Rohtas.

Sample

The study comprised of 60 health care workers working at NMCH Jamuhar, Sasaram.

Sample Size

In this study, 60 health care workers were recruited for the study.

Sampling Technique

In this study Non – probability (convenience) sampling method was used for selection of the study subjects.

Criteria For Sample Selection Inclusion Criteria

- All health care workers (including staff nurses, radiologist, OT technician, ward ayas) working in NMCH, Jamuhar, Sasaram.
- Health care workers who were willing to participate in the research study.
- Health care workers who can read, write and understand Hindi and English.

Exclusion Criteria

- Health care workers who were not available at the time of data collection.
- Health care workers who have not consented to participate in the study.

DESCRIPTION OF THE TOOL

The structured questionnaire comprised of 3 sections.

Section 1. Socio demographic profile of the health care workers.

Part A:- Demographic data Performa such as age group, educational status, occupation, work experience, current area of work, previous knowledge regarding bio-medical waste management.

Section 2 Structured questionnaires on knowledge regarding health care workers.

Part B :- Structured questionnaire with 30 questions related to knowledge regarding bio- medical waste management. Further it has sub sections on – introduction and types of waste, color coding, handling of waste and guidelines.

Section 3. Practice Checklist Regarding Bio-medical Waste Management.

Part C:- Practice checklist on health care workers regarding health care workers.

Scoring:- There are 30 questions. Each questions have 3 questions with 1 correct option. The score assigned for correct answer is 1 and for wrong answer is 0.

The maximum score is 30 and minimum score is 0. Criteria for evaluatin level of knowledge: -

- Good knowledge
- Average knowledge
- Poor knowledge Criteria for evaluating level of knowledge score: -
 - Good = 21 – 30 (80% to 100%)
 - Average = 11 - 20 (60% to 79%)
 - Poor = 0-10 (below 59%)

Criteria for evaluating practice checklist: -

- 01-07 = Inadequate practice
- 08-15 = Adequate practice.

MAJOR FINDINGS OF THE STUDY

Objective -1: To Assess The Knowledge Of Health Care Workers Regarding Bio-medical Waste Management.

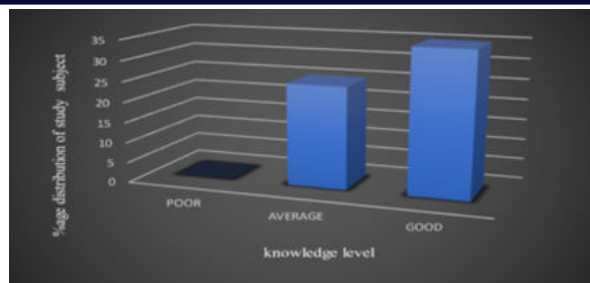


Fig1:-Percentage Distribution Of Study Subjects As Per The Knowledge Regarding Bio- Medical Waste Management.

Table 1: - Frequency And Percentage Distribution Of Knowledge Regarding Bio-medical Waste Management

S.NO	LEVEL OF KNOWLEDGE	FREQUENCY	PERCENTAGE
1	Good	35	58.33%
2	Average	25	41.66%
3	Poor	0	0

Figure 1 and table 1 depicts the frequency and percentage distribution and majority of study subjects (58.33%) had good knowledge regarding bio-medical waste management and (41.66%) had average knowledge regarding bio-medical waste management.

Objective -2: To Assess The Practice Of Health Care Workers Regarding Bio-medical Waste Management By Using An Observational Checklist.



Fig2:- Percentage Distribution Of Study Subjects As Per Their Practice Score Regarding Bio-medica Waste Management.

Table 2: - Frequency And Percentage Distribution Of Study Subjects Regarding Practice Regarding Bio-medical Waste Management

S. No	Level Of Practice	Frequency	Percentage
1	Adequate	58	96.66%
2	Inadequate	2	3.33%

Figure 2, and table 2 depicts the frequency and percentage distribution and majority of study subject (96.66%) had adequate practice regarding bio-medical waste management and (3.33%) had inadequate practice regarding bio-medical waste management.

Objective -3: To Find Out The Association Between Knowledge & Practice Score Of Health Care Workers With The Selected Demographic Variables.

The third objective was to find out the association between knowledge & practice score of health care workers with the selected demographic variables. The findings of study revealed that most of health care workers have 35% good knowledge regarding bio- medical waste management and adequate (58 out of 60) practice.

Objective 3A:

Table 3: -(Chi Square Analysis Between Knowledge And Demographic Behavior N-60)

Socio Demographic Data	Good		Average		Poor		χ^2	Df &	Inference
	No	%	No	%	No	%			
Q1: - Age (in years)									
25- 35 YR	0	0%	22	41.5%	31	58.5%	0.06	Df – 4	NS P value - 0.99
36- 45YR	0	0%	2	40%	3	60%			
ABOVE 46	0	0%	1	50%	1	50%			
Q2: - Educational status									

MEDEICAL	0	0%	22	43.13%	29	56.86%	0.30	Df – 4	NS
PARA MEDICAL	0	0%	3	33.33%	6	66.67%		P value - 0.85	
LEY PERSON	0	0%	0	0%	0	0%			
Q3: - Occupation									
RADIO LOGIST	0	0%	0	0%	0	0%	0.72	Df – 4	NS
OT TECHNITION	0	0%	0	0%	1	100%			
NURSES	0	0%	25	42.37%	34	57.63%			
Q4 :-Years of experience									
< 2 YR	0	0%	13	43.33%	17	56.67 %	13.	Df – 4	NS
2 - 4 YR	0	0%	1	6.67%	14	93.33%	78	P value	
5 - 7YR	0	0%	11	73.33%	4	26.67%		-0	
Q5: - Current area of work									
ICU	0	0%	6	37.5%	10	62.5%	1.32	Df – 4	NS
EMERG ENCY	0	0%	4	30.76%	9	69.24 %			
MEDICINE	0	0%	15	48.39%	16	51.61%			
Q6 :- Source of previous knowledge									
HEALTH PROFFESION	0	0%	20	45.45%	24	54.55%	2.87	Df – 4	NS
MASS MEDIA	0	0%	3	23.08 %	10	76.92%			
FAMILY FRIENDS	0	0 %	2	66.67 %	1	33.33%			
Q7 :- Previous knowledge regarding biomedical waste management									
YES	0	0 %	25	41.67 %	35	58.33 %	16.25	Df – 2	S
NO	0	0%	0	0%	0	0%			

*P<0.05 Is Significant

Table 3 depicts that the significant knowledge score with the socio demographic variables is years of experience and the previous knowledge regarding biomedical waste management whereas the not significant knowledge score with the socio demographic variables is age, educational status, occupation, current area of work and source of previous knowledge regarding bio-medical waste management.

Objective 3 B:

Table 4:(Chi Square Analysis Between Practice And Demographica Variables. N-60)

Demographical Data	Adequate Knowledge		Inadequate Knowledge		χ^2	Df & P value	Inference
	NO	%	NO	%			
Q1: Age (in years)							
25- 35 YR	2	3.77%	51	96.23%	0.27	Df – 2	NS
36- 45YR	0	0%	5	100%		P value	
ABOVE 46	0	0%	2	100%		-0.99	
Q2: Educational status							
MEDICAL	2	3.92%	49	96.08%	0.36	Df – 2	NS
PARA MEDICAL	0	0%	9	100%		P value	
LAY PERSON	0	0%	0	0%		-0.83	
Q3: Occupation							
RADIOLOGIST	0	0%	0	0%	0.03	Df – 2	NS
OT TECHNITION	0	0%	1	100%		P value	
NURSES	2	3.39%	57	96.61%		-0.98	
Q4 : Years of experience							
< 2 YR	1	3.33%	29	96.67%	1.03	Df – 2	NS
2 - 4 YR	1	6.67%	14	93.33%		P value	
5 - 7YR	0	0%	15	100%		-0.90	
Q5: Current area of work							
ICU	1	6.25%	15	93.75%	0.87	Df – 2	NS
EMERGENCY	0	0%	13	100%		P value	
MEDICINE	1	3.22%	30	30.78%		-0.92	
Q6: Source of previous knowledge							

HEALTH PROFSSIONAL	2	4.55%	42	95.45%	0.73	Df - 2	NS
MASS MEDIA	0	0%	13	100%			
FAMILY FRIENDS	0	0%	3	100%			
Q7: Previous knowledge regarding biomedical waste management							
YES	2	3.33%	58	96.67%	2	Df - 1	S
NO	0	0%	0	0%		P value -0	

*P<0.05 is significant

Table 4 depicts that the significant knowledge score with the socio demographic variables is the previous knowledge regarding biomedical waste management whereas the not significant knowledge score with the socio demographic variables is age, educational status, occupation, years of experience, current area of work and source of previous knowledge regarding bio-medical waste management.

DISCUSSION

Chhaya Vinod Dhengle (2019) conducted an institution-based study on the assessment of knowledge regarding biomedical waste management among nursing officers working in selected areas of PCMC Hospital, Pune. A self-administered questionnaire was used for data collection. Nearly half 50% of the Nursing officers had average knowledge, 26.7% of them had poor knowledge, and 23.3% of them had good knowledge regarding biomedical waste management. Educational status, work experience was significantly associated with knowledge on biomedical waste management. The findings of the present study were similar as the majority of health care workers were having 41.66% average knowledge, 58.33% of them had good knowledge regarding biomedical waste management and no one have poor knowledge regarding it.^[7]

Rahul S. Mor (July 31, 2017) conducted a study to ensure the practice level of bio- medical waste management among healthcare workers. Nearly 40% had adequate knowledge and 60% of them had inadequate knowledge. The findings of the study reveal that lack of awareness about bio-medical waste management. The findings of the present study regarding practice as the majority of health care workers were having 96.66% adequate practice and 3.33% inadequate practice level.^[8]

Pavan P. Amin, (2018) conducted a cross-sectional study on the assessment of knowledge and practice regarding biomedical waste management. The findings of the study revealed that all the participants are not following the practice of discarding biomedical waste management, and there is not any proper knowledge regarding it.waste management. The findings of the present study were similar to the present study, but the knowledge and practice level is improved regarding biomedical waste management. The Findings related to demographic characteristics in the present study, that all the selected variables were not Statistically significant with knowledge scores.^[9]

Dalia Reda Ahmed Sobh, Samah Faisal Fakhry and Hind Abdullah Mohamed (2018) conducted a study on the topic knowledge and practice of staff nurses related to health care waste management. The present study aimed to assess knowledge and practice of staff nurses related to health care waste management in El-Zohor hospital. The findings pointed to a statistically significant correlation between nurse's knowledge and practices regarding healthcare waste management. The findings of the present study were similar to the present study, but the knowledge and practice level is improved regarding biomedical waste management. Hence, hypothesis **H0** There is no significant association between knowledge score and practice score and socio demographic variables. Hence, hypothesis **H0** is accepted in these areas. The main aim of the study is to provide knowledge and practices regarding bio-medical waste management among health care workers working in bio-medical waste management.^[10]

CONCLUSION

The present study was aimed at assessing the level of knowledge and practice regarding biomedical waste management among health care workers. The relevant data was collected statistically based on objectives of the study. Out of 60 health care workers, 35 (58.33%) had good knowledge, 25 (41.66%) had average knowledge and none had

poor knowledge regarding biomedical waste management. And as per among 60 health care workers, 58 (96.66%) had adequate practice and 2 (3.33%) had inadequate practice regarding biomedical waste management. This shows that these variables had influenced level of knowledge in this study. The association between the variables is to provide knowledge and practices regarding bio-medical waste management among health care workers working in bio-medical waste management.

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