

Study of Knowledge and Awareness Regarding Biomedical Waste Management (BMW) at a Rural Teaching Hospital of North India

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ABSTRACT

To study the knowledge and awareness among healthcare workers regarding bio-medical waste management GMC Handwara, a cross-sectional study in retrospective design was conducted in randomly selected areas. The study population included doctors, nurses, technician and sanitary staff. A semi-structured questionnaire was adapted from different research papers were used as a study tool.

Observation revealed that among the entire study group doctors had a highest mean knowledge score, followed by nursing staff. Lowest mean knowledge score was found in sanitary attendants.

There was a significant difference in mean knowledge score of graduate nurses who had a higher mean knowledge score compared to other nursing staff.

Keywords: Biomedical waste, Knowledge, Awareness

INTRODUCTION

Biomedical waste means any waste which is generated during the diagnosis, treatment or immunization of human beings or animals or in any research activities pertaining thereto or in the production or testing of biological and including categories mentioned in the schedule one of biomedical waste rules 2000 by ministry of environment and forest notification [1].

Effective management of biomedical waste is not only the legal necessity but also a social responsibility. Hence there is a need for resources material to help administrator, doctors, nurses, and paramedical staff. The purpose of BMW are mainly to reduce waste generation, to ensure its efficient collection, handling, as well as safe disposal in such a way that it controls infection and improve safety for employees working in the system. For this, a conscious, coordinated and cooperative efforts have to be made from physicians to ward boys [2].

The present study was undertaken to access the knowledge regarding

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biomedical waste management amongst health care workers of a rural teaching hospital of North India.

Objective

To Study Knowledge among health care workers (HCWs) regarding biomedical waste management (BMW) at a rural teaching hospital.

Methodology

Study Design:

A cross sectional survey was conducted among the health care workers (HCWs).

Study duration

Study was conducted for duration of three month 1st October 2023 to 31st December 2023.

Study Areas:

The study was conducted in the following areas of the hospital

1. Emergency
2. Wards
3. Operation Theatre
4. Administrative section

Study population

The following categories of staff members were included:

- a. Resident doctors (Senior Residents, Junior Residents)
- b. Nursing staff
- c. Technicians
- c. Sanitation staff

Study Tool:

To assess knowledge of health care workers (HCWs) regarding biomedical waste management, the researcher developed a semi-structured questionnaire.

This Annexure (I) was divided into three parts.

1. Part 1 was used to assess the demographic profile of study population.
2. Part 2 was used to assess the knowledge of Health care workers.

Demographic Profile:

The demographic profile included various parameters like Designation, Age, Sex, Work area, experience, and qualification.

Knowledge Score:

The knowledge questionnaire consisted of 15 regarding general awareness about biomedical waste, diseases spread by biomedical waste, biomedical waste management handling rules 2016 rules, general management of biomedical waste during COVID 19 pandemic, and biomedical waste management in SKIMS.

The questions regarding knowledge were scored from 0 to 15. Each correct answers by the participant was given a unit score. A maximum of 15 score was possible within the parameters of research tool used. Knowledge Score was calculated by cumulative score of correct responses and was compared between various groups.

The maximum score was assessed as follows:

Score	Grading
0-5	Poor
6-10	Average
11-15	Excellent

Sampling

All the staff working in the selected areas were included in the study

RESULTS

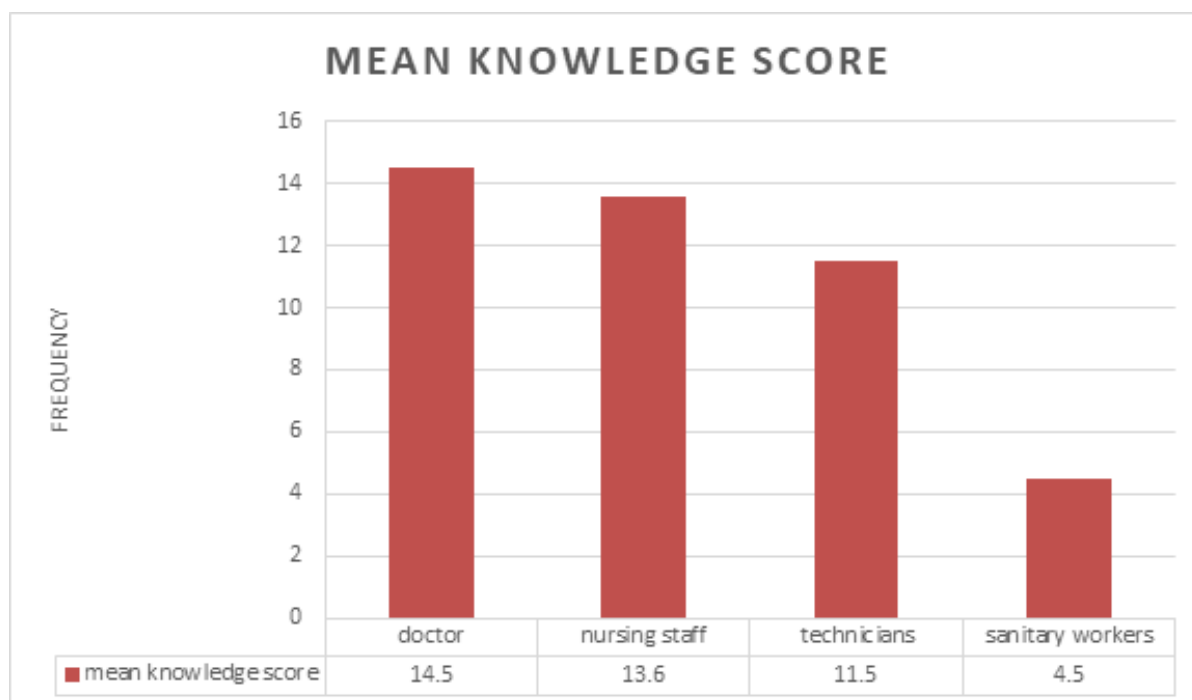
A total of 30 doctors, 50 nursing staff, 20 technicians and 15 sanitation workers were studied.

Knowledge Score

It was found that doctors had highest knowledge scores as compared to other staff. (Table 1)

Table 1: Mean knowledge score in relation to designation.

Designation	Mean knowledge score
Doctors	14.5
Nursing staff	13.6
Technicians	11.5
Sanitary workers	4.5

**Figure 1:** Mean knowledge score in relation to designation.

Mean knowledge score and Age

No statistically significant difference was noted between different age groups. (Table 2)

Table 2: Mean knowledge score and Age.

Designation	Age group	Mean knowledge score	P value
Residents	20-40	14.8	0.65
	40-60	13.6	
Nursing staff	20-40	13.9	0.54
	40-60	13.1	
Technicians	20-40	11.4	0.7654
	40-60	11.6	
Sanitary workers	20-40	4.4	0.92
	40-60	4.6	

Table 3: Mean knowledge score and gender.

Designation	Gender	Mean knowledge score	P value
Doctors	Male	14.85	0.173
	Female	14.9	
Nursing staff	Male	13.6	0.87
	Female	13.5	
Technicians	Male	11.4	0.654
	Female	11.5	
Sanitary workers	Male	4.41	0.192
	Female	4.60	

Table 4: Mean knowledge score and qualification

Designation	Qualification	Mean knowledge score	P value
Doctors	Post graduates	15.0	0.13
	Graduates	14.9	
Nursing staff	Graduates	14.2	0.0001
	Others	11.6	
Technicians	Post graduates	9.8	0.614
	Graduates	9.5	

Table 5: Mean knowledge score and experience

Designation	Gender	Mean knowledge score	P value
Doctors	0-10	14.8	0.773
	10-20	14.9	
	>20	15.0	
Nursing Staff	0-10	13.4	0.121
	10-20	12.9	
	>20	12.0	
Technicians	0-10	11.0	0.606
	10-20	11.6	
	>20	11.5	
Sanitary workers	0-10	4.41	0.065
	10-20	4.60	
	>20	4.00	

DISCUSSION

Observation revealed that among the entire studied group doctors had a highest mean knowledge score followed by the nursing staff. Lowest mean knowledge score was found in sanitary attendants. In line with finding of present study, researched by Manoj Bansal, et al. [4] revealed the awareness regarding biomedical waste management was highest among doctors and followed by paramedical staff and least among non-medical staff.

Gupta et al. [5] in 2015 conducted a study at Pt.B.D Sharma PGIMS, Rohtak during the month of September and October 2013. Knowledge score as satisfactory was highest among doctors (86%), followed by nursing staff (70%) and lab technicians (46%). Study by Rawat Rana, et al. [6] June 2016 to assess KAP regarding bio-medical waste and to determine the co-relation between KAP and professional category. This study revealed that doctors were majority of those with good knowledge and attitude and nurses and the same in practice while cleaning staff had those with poor KAP as compared to all other categories. An average level of KAP was most prevalent in each category.

Observation for mean knowledge of score via gender of healthcare workers revealed that there was a little difference among "male" and "female" doctors in relation to mean knowledge score. Among nursing group female had a higher mean knowledge score compared with their male counter parts. In line with finding of present study, research by Ramesh Kumar, et al. [7]. Doctors and nurses have better knowledge, positive attitude and good practices compared to paramedics and sanitary staff regarding infection waste management and were found statistically significant.

SUMMARY

To study the knowledge and attitude among healthcare workers regarding bio-medical waste management at GMC handwara, a cross-sectional study in prospective design was conducted in randomly selected areas. The study population included doctors, nurses, technician and sanitary staff. A semi-structured questionnaire was adapted from different research papers were used as a study tool.

Observation revealed that among the entire study group doctors had a highest mean knowledge score, followed by nursing staff. Lowest mean knowledge score was found in sanitary attendants.

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