

# Knowledge among Health Care Workers (HCWs) Regarding Biomedical Waste Management (BMW) during COVID 19 Pandemic

Abas K<sup>1</sup>, Yattoo GH<sup>2</sup> and Sarwar Mir MD<sup>3\*</sup>

<sup>1</sup>Senior Resident, Department of Hospital administration, India

<sup>2</sup>Head Department of Hospital administration, India

<sup>3</sup>Resident Medical Officer SKIMS, India

\*Corresponding author: Mohammed Sarwar Mir, Resident Medical Officer, SKIMS, India, Email: mohammedsarwarmir@gmail.com

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## Abstract

To study the knowledge and attitude among healthcare workers regarding bio-medical waste management at SKIMS, a cross-sectional study in prospective design were 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 postgraduate nurses who had a higher mean knowledge score compared to undergraduates having a mean knowledge score.

**Keywords:** Biomedical Waste; COVID 19; Knowledge

## Introduction

The outbreak of coronavirus disease in late 2019 is far more than global crises. COVID-19 has had a serious impact on all parts of our society, and waste management is no exception. The on-going COVID-19 pandemic has already turned healthy places around the world into a living hell with massive death tolls because of its fastest spreading nature, and continuously leading to lockdowns in almost every part of the world. Amid all the problems so far it created, one significant problem that can create major havoc in this already devastating and contagious atmosphere in a densely populated city is not handling medical waste properly [1].

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 [2].

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, conscious, coordinated and cooperative efforts have to be made from physicians to ward boys [3].

The present study was undertaken to access the knowledge regarding BWM management amongst health care workers of a 1200 bedded tertiary care hospital SKIMS Soura Srinagar of India during COVID 19 pandemic.

## Objective

To Study Knowledge among health care workers (HCWs) regarding biomedical waste management (BMW) during COVID 19 pandemic.

## Methodology

### Study Design

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

### Study Duration

Study was conducted for duration of one month December 2020.

### Study Areas

The study was conducted in the following areas of Sher-i-Kashmir Institute of Medical Sciences.

- Infectious Disease block
- Emergency Medicine Department

### Study Population

The following categories of staff members were included:

- Resident doctors (Senior Residents, Post Graduate, Junior Residents)
- Nursing staff
- Technicians
- 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.

- Part 1 was used to assess the demographic profile of study population.
- 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, waste generated in COVID 19 wards, diseases spread by biomedical waste, COVID 19 modes of transmission, 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 answer 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 was included in the study

### Results

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

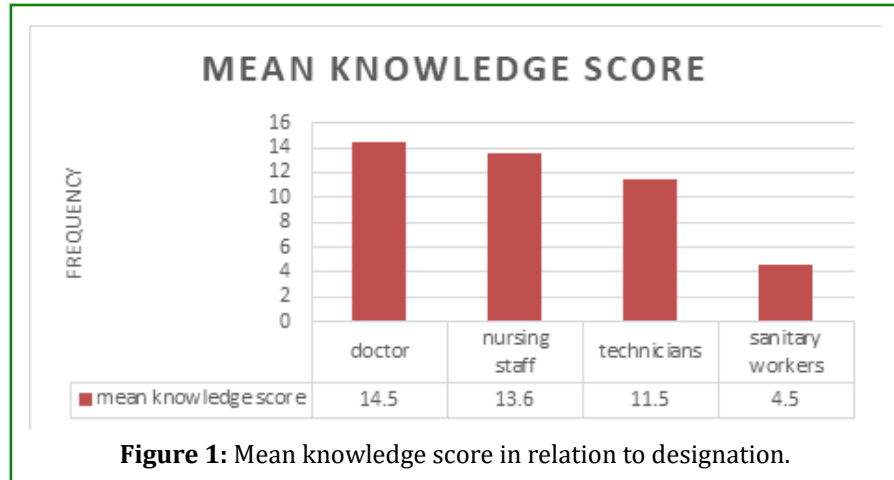
Knowledge and Attitude among Health care workers (HCWs) regarding biomedical waste management (BMW) during COVID 19 pandemic.

### Knowledge Score

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

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

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



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	0.0001
	40-60	12.1	
Technicians	20-40	11.4	0.7654
	40-60	11.6	
Sanitary workers	20-40	4.4	0.92
	40-60	4.6	

**Table 2:** Mean knowledge score and Age.

Designation	Gender	Mean knowledge score	P value
Doctors	Male	14.85	0.173
	Female	14.9	
Nursing staff	Male	13.6	0
	Female	13.5	
Technicians	Male	11.4	0.654
	Female	11.5	
Sanitary workers	Male	4.41	0.192
	Female	4.6	

**Table 3:** Mean knowledge score and gender.

Designation	Qualification	Mean knowledge score	P value
Doctors	Post graduates	15	0.13
	Graduates	14.9	
Nursing staff	Post graduates	14.2	0.0001
	Graduates	11.6	
Technicians	Post graduates	9.8	0.614
	Graduates	9.5	

**Table 4:** Mean knowledge score and qualification.

Designation	Gender	Mean knowledge score	P value
Doctors	0-10	14.8	0.773
	20-Oct	14.9	
	>20	15	
Nursing Staff	0-10	13.4	0.121
	20-Oct	12.9	
	>20	12	
Technicians	0-10	11	0.606
	20-Oct	11.6	
	>20	11.5	
Sanitary workers	0-10	4.41	0.065
	20-Oct	4.6	
	>20	4	

**Table 5:** Mean knowledge score and experience.

## 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 access 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 SKIMS, a cross-sectional study in prospective design were 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 postgraduate nurses who had a higher mean knowledge score compared to undergraduates having a mean knowledge score.

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