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Research Article

Knowledge Among Health Care Workers (HCWs) Regarding Biomedical Waste Management (BMW) During COVID 19 Pandemic

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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 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 was 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 is 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 a global crisis.

COVID-19 has had a serious impact on all parts of our society, and waste management is no exception. The ongoing 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, a 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.

1. Infectious Disease block
2. Emergency Medicine Department

Study population

The following categories of staff members were included**:**

a. Resident doctors (Senior Residents, Post Graduate, Junior Residents)
b. Nursing staff
c. Technicians
d. 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, 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 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 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)

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

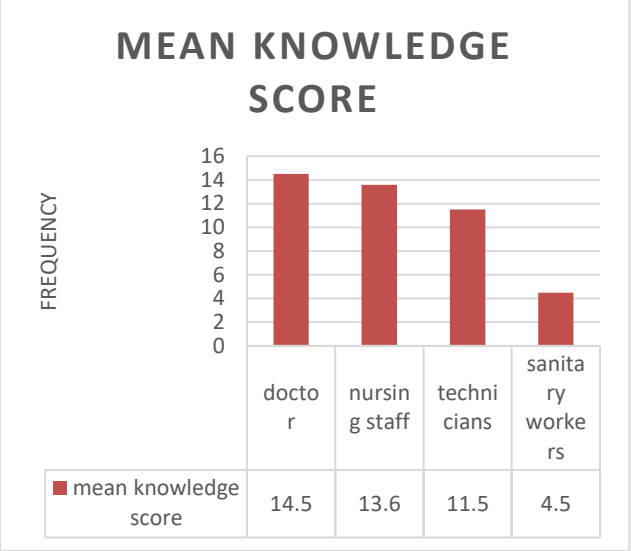

Figure 1: Mean knowledge score in relation to designation

Mean knowledge score and Age

Table 2: Mean knowledge score and Age

Designation	Age group	Mean knowledge score	P value
Residents	20-40 40-60	14.8 13.6	0.65
Nursing staff	*20-40* *40-60*	*13.9* *12.1*	*0.0001*
Technicians	20-40 40-60	11.4 11.6	0.7654
Sanitary workers	20-40 40-60	4.4 4.6	0.92

Mean knowledge score and Gender

Table 3: Mean knowledge score and gender

Designation	Gender	Mean knowledge score	P value
Doctors	Male Female	14.85 14.9	0.173
Nursing staff	Male Female	13.6 13.5	0.0
Technicians	Male Female	11.4 11.5	0.654
Sanitary workers	Male Female	4.41 4.60	0.192

Mean knowledge score and Qualification

Table 4: Mean knowledge score and qualification

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

Mean knowledge score and experience

Table 5: Mean knowledge score and experience

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

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**[4] et al revealed the awareness regarding biomedical waste management was highest among doctors and followed by paramedical staff and least among non-medical staff.

Gupta[5] et al 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** [6] et al 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**[7] et al , Doctors and nurses have better knowledge**,** positive attitude attitude and good practices compared to paramedics and sanitary staff regarding infec tion 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 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 was 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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Declarations

Data availability

The datasets used for this study are available from the corresponding author on reasonable request.

Funding statement

Not applicable

Conflict of interest

The authors declare no conflict of interest

Acknowledgments

Not applicable

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