

Original Research Article

A cross sectional study on the knowledge, attitude and practices of medical and paramedical staff regarding the bio-medical waste management in a tertiary care institute in Lucknow

Sandhya Mishra¹, Deepak Chopra^{2*}, Nidhi Jauhari³

¹Department of Community Medicine, Mayo Institute of Medical Sciences, Barabanki, Uttar Pradesh, India

²Department of Community Medicine, IIMSR, Integral University, Lucknow, Uttar Pradesh, India

³Department of Ophthalmology, Chandra Eye Care, Lucknow, Uttar Pradesh, India

Received: 14 July 2020

Accepted: 08 September 2020

*Correspondence:

Dr. Deepak Chopra,

E-mail: drdeepakchoprakgm17@gmail.com

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ABSTRACT

Background: The bio-medical waste products create particularly serious problems for the municipalities and its safe disposal is becoming a serious environmental problem. The concern regarding medical wastes is mainly due to the presence of pathogenic organisms and organic substances in hospital solid wastes in significantly higher concentrations. About one fourth of biomedical waste is considered as hazardous and may affect the health of both medical personnel and general community. Aim and objectives of the research was to assess the knowledge, attitude and practice about the biomedical waste management among the staff (medical and paramedical) of a tertiary care medical institute.

Methods: The design of the study was observational, descriptive and cross-sectional. It was conducted in a 500 bedded private sector tertiary care medical institute in Lucknow. The study unit consisted of medical and paramedical staff (doctors, staff nurses, and ward boys) and sample size was 241 who consented to be a part of the study. All the study units who had been in the job for atleast 6 months in IIMSR who consented for the study were included; purposive convenience sampling was implemented and study period was from January 2018 to March 2018.

Results: Majority across all the types of study participants were males, married, residing in urban areas and having not undergone any formal training. Our study found that though all the study participants in various groups were having the relevant level of knowledge but attitude and practices were variable.

Conclusions: This study showed that knowledge may be higher but attitude and practices are variable and are not related to educational level.

Keywords: Awareness, Bio medical waste, Health care waste

INTRODUCTION

Hospital waste refers to all waste, biological or non-biological that is discarded, and is not intended for further use in a hospital. According to a World Health Organization (WHO) report, around 85% of the hospital wastes are actually non-hazardous, 10% are infective (hence, hazardous), and the remaining 5% is non-infectious but hazardous (chemical), pharmaceutical and radioactive.¹ Bio-medical waste (BMW) has been entirely different from hospital waste in the sense that it is “any

solid, fluid or liquid waste, including its container and any intermediate product”. These products could be generated during the diagnosis, treatment of immunization of human beings or animals, in research pertaining thereto, or in the production or testing of biological and the animal waste from slaughter houses or any other like establishments.²

These waste products create particularly serious problems for the municipalities and its safe disposal is becoming a serious environmental problem and an ecological crisis is slowly brewing up, threatening to choke the earth and its

life supporting systems. The concern regarding the medical waste is mainly due to the presence of pathogenic organisms and organic substances in hospital solid wastes in significantly higher concentrations. The substantial number of organisms of human origin in solid waste suggests the presence of virulent strains of viruses and pathogenic bacteria in undetected numbers. Therefore improper handling of waste in the hospital may increase the airborne pathogenic bacteria, which could adversely affect the hospital environment and community at large. Improper hospital waste management has serious impact on our environment. Apart from risk of water, air and soil pollution, it has considerable impact on human health due to aesthetic effects.³

A number of national and local seminars, workshops and symposia have been organized by a number of institutions to develop methodology for BMW management and its understanding. However, the ground realities are far from ideal and need a lot of effort and commitment at the top level for effective implementation. The current scenario in the country reveals partial or no segregation at the time of generation, which at times is done by the contractors, or the rag pickers.³ The improper practice of segregation at the site of origin has been observed which causes mixing of infectious and non-infectious waste. It was observed in that study that there is a big gap between knowledge and attitude of the medical workers and their status or qualification has no role in that.⁴

Researchers have found that the majority of the doctors, nurses, and housekeepers have unsatisfactory knowledge and inadequate practice related to health care waste management.⁵ The objectives and rationale of BMW management are mainly to reduce waste generation, efficient collection, handling and disposal in such a way that it controls infection and provides safety for employees working in the system and ensure cost effectiveness by avoiding penalties and fines imposed by regulatory authorities. Accordingly, waste is required to be treated and disposed of in accordance with schedules prescribed. The essentiality is to recognize the waste, identify where waste is generated and determine the reason of generation, and final plan disposal of the waste in a scientific manner so as to render it environmentally non-hazardous and eliminate the source of infection.⁶

This study was therefore, conducted to understand the awareness, attitude and practices amongst the medical and paramedical staff with regards to BMW management. This study may be of help to the authorities to develop the strategy for improving the BMW management.

METHODS

Study design

The design of the study was observational, descriptive and cross-sectional.

Study place

The present study was conducted in a 500 bedded private tertiary care medical institute in Lucknow, Uttar Pradesh, India.

Study unit

The study unit consisted of medical and paramedical staff (doctors, staff nurses, and ward boys) working in Integral Hospital.

Sample size

All the medical and paramedical staff working in the hospital were enumerated, out of which 241 (41 doctors, 56 staff nurses, 12 operation theatre staff, 122 sanitary workers, 10 laboratory technicians and lab attendants) consented to be the part of the study.

Inclusion criteria

All the study units who had been in the job for at-least 6 months in IIMSR who consented for the study were included in the study.

Exclusion criteria

Non-consenting study subjects or subjects with less than 6 months in job were excluded from the study.

Sampling

Purposive convenience sampling method was used (all the medical and paramedical staff working in IIMSR were invited to participate in the study).

Study technique

Interview and recording of information on a pre-designed and pre-tested questionnaire was done. The participants were informed about the aim and objectives of the study and proper informed consent was taken.

Study period

The study was conducted from January 2018 to March 2018.

Variables of interest

Variables of interest included age, sex, place of residence, marital status and knowledge, attitude and practice.

Statistics

Descriptive statistics (percentages and proportions) was done using Microsoft office.

Questionnaire

A pretested and pre-validated questionnaire was used. It consisted of four parts: socio-demographic characteristics like age, sex, marital status, and place of residence; knowledge; attitude; and practices regarding BMW management.

Ethical approval was taken from the institutional research and ethical committee of the institute. The responses on positive knowledge, attitude and practice were based on whether they have heard of BMW management and positive attitude and practices. Then the subjects who gave positive responses were further classified into knowledge (low, medium and high), attitude (less favorable, favorable and most favorable) and practices (good, moderate and poor).

RESULTS

Out of the total 241 subjects, 17% were doctors, 23% were staff nurses, 5% were operation theatre (OT) staff, 51% were sanitary staff and 4% were laboratory technicians

(LT). Table 1 shows the socio-demographic characteristics of the study subjects. The doctors have the highest mean age while the LT were the youngest. Mostly younger age group participated in our study. Majority across all the types of study participants were males, married, residing in urban areas and having not undergone any formal training.

Table 2 shows the study subjects who have given positive responses regarding BMW management. With the exception of sanitary staff and LT, almost all of the subjects in doctor, nurses and OT staff group have given positive responses about the knowledge part. In all the study groups, majority had shown positive attitude but the practices part was deficient in all the groups except the staff nurses group who showed positive practices.

Table 3 shows that three fourths of the study participants had high to medium level of knowledge while only approximate half of study participants had shown most favorable to favorable attitude. Less than half of the study participants had good to moderate practices regarding BMW management.

Table 1: Socio-demographic characteristics of study subjects.

Socio-demographic variables		Doctors (n=41)	Staff nurses (n=56)	Operation theatre staff (n=12)	Sanitary workers (n=122)	Laboratory technicians and attendants (n=10)
Age (mean in years)		36.7	33.5	29.1	29.2	26.4
Sex	Male	34	42	10	104	09
	Female	7	14	02	18	01
Marital status	Married	38	45	8	102	3
	Unmarried	2	9	4	19	7
	Others	1	2	0	1	0
Place of residence	Urban	40	41	11	89	9
	Rural	1	15	1	33	1
Undergone formal training	Yes	3	0	2	12	0
	No	38	56	10	110	10

Table 2: Positive answers of questionnaire by staff of different groups.

Group	Doctors (n=41)		Nurses (n=56)		Operation theatre staff (n=12)		Sanitary staff (n=122)		Laboratory staff (n=10)	
	No	%	No	%	No	%	No	%	No	%
	Knowledge	41	100	54	96	12	100	88	72	06
Attitude	38	94	52	92.8	12	100	105	86	10	100
Practice	18	43	48	85.7	9	75	49	40	04	40

Table 3: Knowledge, attitude and practices among the study subjects who showed positive responses.

Variables	Category	Numbers	Percent (%)
Knowledge (n=201)	Low	53	26
	Medium	64	32
	High	84	42
Attitude (n=217)	Less favorable	104	48
	Favorable	43	20
	Most favorable	70	32

Continued.

Variables	Category	Numbers	Percent (%)
Practices (N=128)	Poor	66	52
	Moderate	23	18
	Good	39	30

DISCUSSION

Our study found that though all the study participants in various groups were having the relevant level of knowledge but attitude and practices were variable. There was a considerable difference amongst them, as far as attitude and practices of BMW were concerned. This may imply that the people with higher education have more awareness about the regulations involving BMW management; but the higher educational status may not be having a direct positive impact on their attitudes and practices.

Many studies have indicated that responses regarding knowledge indicate that the awareness about hygiene exists, but is not being practiced.⁷ One of the studies found that the knowledge of the students regarding waste management was not appropriate.⁸ Studies conducted in Asia have observed that the most of Asian students appeared to have lack of environmental consciousness and attitude needed to protect their environment. Therefore it is important to develop skills, awareness, and attitude and put into practice.⁹ An Indian study measured the attitude regarding BMW management of doctors, nurses, and other support staff. They found that the people with higher education and knowledge have better attitudes towards the subject which is in contrast to our study.³ Studies have also observed that a correlation between the level of students' knowledge and their activities was found regarding waste management.^{10,11}

A study concluded that majority of the study subjects have unsatisfactory knowledge attitude and inadequate practices related to waste management and has highlighted the importance to improve the knowledge about waste management to protect the environment from the negative impact of waste and further recommended to implement the need based training program for students at their school hostels and work places.¹² Another study concluded that education has a positive impact on knowledge, attitudes and practices in all categories of staff and the need to develop a system of continuous education for all categories of staff but another study has contradictory findings.^{3,13}

Limitations

Limitations of the study was the small sample size of various groups affecting the generalizability of the study.

CONCLUSION

This study showed that knowledge may be higher but attitude and practices are variable and are not related to educational level. Nursing professionals have a better

attitude and practice towards BMW management. The other para-medical staff including laboratory and sanitary workers had less knowledge on the subject, but had a higher positive attitude and practices.

Recommendations

Doctors need to be more sensitized about proper practices towards BMW management.

ACKNOWLEDGEMENTS

The authors would like to acknowledge the dedicated and diligent support of all the staff of the Department of Community Medicine.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the institutional ethics committee

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Cite this article as: Mishra S, Chopra D, Jauhari N. A cross sectional study on the knowledge, attitude and practices of medical and paramedical staff regarding the bio-medical waste management in a tertiary care institute in Lucknow. *Int J Sci Rep* 2020;6(11):451-5.