Knowledge and Practices Regarding Biomedical Waste Management among Health Care Workers of Tertiary Care Hospitals of Meerut, U.P.

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Abstract

Background: The biomedical waste management and handling rules have been notified in 1998. The rules were amended twice in 2000, primarily to address administrative matters. The rule makes it mandatory for the health care establishments to segregate, disinfect and dispose their waste in an eco-friendly manner. An important pre-requisite and key to successful waste management program is segregation which is the separation of different types of waste as per treatment and disposal option. Segregation and collection of various categories of waste should be done at the source, in separate containers so that each category is treated in a suitable manner to render it harmless. For waste management to be effective, the waste should be managed at every step, from acquisition to disposal.[1]

Material & Method: Across-sectional study was conducted from January-December 2016 among HCWs of tertiary-care hospitals of Meerut. Simple random sampling was used for the selection of hospitals. Data was analyzed using SPSS-19 and Chi-square test.

Findings: 96.2% of HCWs had correct knowledge and practice related to category-1,8 BMW, 70-80% HCWs had correct knowledge and practices for category-2,3,4,5,9,10.Categories 6,7 knowledge (86.9%) and correct practice (87.9%). HCWs (67.5%) having correct knowledge regarding point of segregation of BMW and practice, 21.0% of the HCWs who had incorrect knowledge and practice.

Conclusion: The knowledge regarding BMW was found to be satisfactory in all the HCWs except for IV class workers. Similarly practices regarding BMW were also found to be satisfactory in all the HCWs but lower for IV class workers.

Keywords: *Biomedical waste management, hospital, medical professionals*

Introduction

Nature has made everything for a defined purpose. 'Anything which is not intended for further use is termed as waste'. In the scientific and industrial era, turnover of the products is very high. With increasing need of Health Care in fast changing society, the role of hospitals/nursing homes comes to the forefront. Hospital is a residential establishment which provides short term and long term medical care consisting of observational, diagnostic, therapeutic and rehabilitative services for a person suffering or suspected to be suffering from disease or injury and for parturient.[1]

The biomedical waste management and handling rules have been notified in 1998. The rules were amended twice in 2000, primarily to address administrative matters. The rule makes it mandatory for the health care establishments to segregate, disinfect and dispose their waste in an eco-friendly manner. An important pre-requisite and key to successful waste management

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program is segregation which is the separation of different types of waste as per treatment and disposal option. Segregation and collection of various categories of waste should be done at the source, in separate containers so that each category is treated in a suitable manner to render it harmless. For waste management to be effective, the waste should be managed at every step, from acquisition to disposal.[2]

The term "biomedical waste" has been defined as "any waste which is generated during diagnosis, treatment or immunization of human beings or animals, or in the research activities pertaining to or in the production or testing of biological and includes categories as mentioned in schedule I of the Government of India's Biomedical Waste (Management and Handling) Rules 1998".[3]

The inadequate and inappropriate practice of handling of healthcare waste may have serious health consequences and a significant impact on the health of health care personnel, to waste workers, patients, to general public and environment as well.[4]

Material & Method

The present cross sectional study was done among healthcare workers with the objective to assess their practice regarding biomedical waste management. The study was conducted from March 2016 to February 2017. Ethical approval for the study was taken from institutional ethical committee. Simple random sampling was used for selection of hospitals. Out of the two tertiary care hospitals in the city one was selected randomly and from the list of 150 bedded hospitals in the city one was selected randomly. After that list of all the health care workers (nursing staff, OT technician, lab technician and fourth class) were procured from respective hospitals. Two visits were made in both the hospitals. Health care workers who were present on these two visits and give consent were included in the study. Each category of Health Care Worker was attended separately and two visits for each category were made for collection of data. Prior permission was taken from the concerned authority and arrangement was made to gather the workers at pre-decided date, time and place. Those who were left due to duty etc were attended on second visit. The purpose and objectives of the study was explained to the Health Care Workers prior to data collection and they were assured about the confidentiality of the responder. Data was collected on predesigned pretested semi structured questionnaire which included details of socio-demographic variables like age, sex, education, designation and other details about knowledge of Health Care Workers regarding Biomedical Waste Management. Before filling the questionnaire, each question was explained to the Health Care Workers so that they could understand the questionnaire completely and could answer properly. Single observer demonstrated the questionnaire to all workers. Completion of questionnaire was assured at the time of collection. Data was coded, entered and analysed using SPSS version 19 and suitable test was applied.

Findings

Table No.-1 ASSOCIATION BETWEEN KNOWLEDGE AND PRACTICE RELATED TO BMW AMONG HCWs

		PRACTICES				TOTAL		$\chi 2$	pValue
	CORRECT		INCORRECT						
	FREQ	%	FREQ	%	FREQ	%			
CATEGORY 1									
KNOWLEDGE	CORRECT	302	96.2	2	0.6	304	96.8	167.21	0.001
	INCORRECT	3	1	7	2.2	10	3.2		
	TOTAL	305	97.1	9	2.9	314	100		
CATEGORY 2									

Cont... **Table No.-1 ASSOCIATION BETWEEN KNOWLEDGE AND PRACTICE RELATED TO BMW AMONG HCWs**

KNOWLEDGE	CORRECT	225	71.7	6	1.9	231	73.6	275.08	0.001
	INCORRECT	2	0.6	81	25.8	83	26.4		
	TOTAL	227	72.3	87	27.7	314	100		
CATEGORY 3									
KNOWLEDGE	CORRECT	228	72.6	1	0.3	229	72.9	289.08	0.001
	INCORRECT	4	1.3	81	25.8	85	27.1		
	TOTAL	232	73.9	82	26.1	314	100		
CATEGORY 4									
KNOWLEDGE	CORRECT	225	71.7	6	1.9	231	73.6	275.08	0.001
	INCORRECT	2	0.6	81	25.8	83	26.4		
	TOTAL	227	72.3	87	27.7	314	100		
CATEGORY 5									
KNOWLEDGE	CORRECT	255	81.2	2	0.6	257	81.8	251.59	0.001
	INCORRECT	6	1.9	51	16.2	57	18.2		
	TOTAL	261	83.1	53	16.9	314	100		
CATEGORY 6									
KNOWLEDGE	CORRECT	273	86.9	0	0	273	86.9	253.88	0.001
	INCORRECT	7	2.2	34	10.8	41	13.1		
	TOTAL	280	89.2	34	10.8	314	100		
CATEGORY 7									
KNOWLEDGE	CORRECT	276	87.9	11	3.5	287	91.4	191.54	0.001
	INCORRECT	2	0.6	25	8	27	8.6		
	TOTAL	278	88.5	36	11.5	314	100		
CATEGORY 8									
KNOWLEDGE	CORRECT	302	96.2	2	0.6	304	96.8	167.21	0.001
	INCORRECT	3	1	7	2.2	10	3.2		
	TOTAL	305	97.1	9	2.9	314	100		
CATEGORY 9									
KNOWLEDGE	CORRECT	240	76.4	7	2.2	257	81.8	247.34	0.001
	INCORRECT	5	1.6	62	19.7	67	21.3		
	TOTAL	261	83.1	69	22	314	100		
CATEGORY 10									
KNOWLEDGE	CORRECT	240	76.4	7	2.2	257	81.8	247.34	0.001
	INCORRECT	5	1.6	62	19.7	67	21.3		
	TOTAL	261	83.1	69	22	314	100		

Table No.-2 ASSOCIATION BETWEEN KNOWLEDGE AND SEGREGATION PRACTICES OF BMW AMONG HCWs

		PRACTICES				TOTAL		$\chi 2$	p Value
	CORRECT		INCORRECT						
	FREQ	%	FREQ	%	FREQ	%			
POINT OF SEGREGATION OF BMW									
KNOWLEDGE	CORRECT	212	67.5	34	10.8	246	78.3	6.213	0.013
	INCORRECT	66	21	2	0.6	68	21.7		
	TOTAL	278	100	36	100	314	100		

96.2% of HCWs had correct knowledge and were doing correct practice related to category 1 and 8 BMW ($p<0.05$), while 70-80% HCWs had correct knowledge for category 2,3,4,5,9 and 10 and were doing correct practices for the same. Their association was found to be statistically significant. For categories 6 and 7 knowledge and correct practice was 86.9% and 87.9% respectively. Two-third of the HCWs (67.5%) having correct knowledge regarding point of segregation of BMW were doing correct practice whereas nearly one-fourth (21.0%) of the HCWs who had incorrect knowledge were doing correct practice. The difference was found to be statistically significant ($p< 0.05$).

Conclusion

The present cross-sectional study was conducted among health care workers of tertiary care hospitals of Meerut city with the objectives to assess practice regarding Biomedical waste Management. Practices regarding Bio-Medical Waste were also found to be satisfactory in all the Health Care Workers but lower for IV class workers.

Conflict of Interest: There is no Conflict of interest

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Ethical approval: The study was approved by the Institutional Ethics Committee of Subharti Medical College Meerut UP

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