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Management of biomedical waste: Awareness and practices among Safai Karamcharis of health centers in Chandigarh

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ABSTRACT

Background: A major issue related to current Bio-Medical waste management in many hospitals is that the implementation of Bio-Waste regulation is unsatisfactory as some hospitals are disposing of waste in a haphazard, improper and indiscriminate manner.
Objective: To assess knowledge and practices of safai karamcharis regarding biomedical waste management.
Methodology: A survey of the safai karamcharis handling the biomedical waste using a scientifically prescribed Questionnaire was done. The knowledge of the participants regarding handling of biomedical waste was assessed. The practice of the participants regarding biomedical waste handling was assessed onsite.
Result: 37.5% had received immunization against hepatitis B and 54.2% have been immunized against tetanus. Biomedical training has been attended by 20.8% of the participants during their service tenure. 41.7% and 25% of the safai karamcharis stated that they were using gloves and mask respectively.

Keywords: NIL

INTRODUCTION

Health care waste refers to all the waste generated by a health care establishment. Unwanted materials generated during diagnosis, treatment, operation, immunization or in research activities including production of biological is termed as biomedical waste.[1]

Biomedical waste management has recently emerged as an issue of major concern not only to hospitals, nursing home authorities but also to the environment. Now it is a well established fact that there are many adverse and harmful effects to the environment including human beings which are caused by the "Hospital waste" generated during the patient care.[2] Since the implementation of the Biomedical Waste Management and Handling Rules (1998),[3] every concerned health personnel is expected to have proper knowledge, practice, and capacity to guide others for waste collection and management, and proper handling techniques.

All hospitals, clinics, nursing homes, community health centers, primary health centers, slaughter houses and laboratories have to ensure safe disposal and environmentally sound management of waste produced by them as specified in the rules for proper disposal of bio-medical waste. It is the responsibility of head of the health care facility to safeguard the health of workers involved in handling, transportation, and disposal of bio- medical waste besides ensuring safety to the community and environment. Any violation of the rules by any person is punishable with fine or imprisonment under the Environment protection Act 1986.[4]

A major issue related to current Bio-Medical waste management in many hospitals is that the

implementation of Bio-Waste regulation is unsatisfactory as some hospitals are disposing of waste in a haphazard, improper and indiscriminate manner. Lack of segregation practice, result in mixing of hospital wastes with general waste making the whole waste stream hazardous. Inappropriate segregation ultimately results in an incorrect method of waste disposal.[5]

Adequate knowledge about the health hazard of hospital waste, proper technique and methods of handling the waste, and practice of safety measures can go a long way toward the safe disposal of hazardous hospital waste and protect the community from various adverse effects of the hazardous waste.

Although, there is an increased global awareness among health professionals about the hazards and also appropriate management techniques but the level of awareness in India is found to be unsatisfactory. This study has been undertaken with a view to find the Knowledge and practices among safai-karamcharis regarding proper disposal of biomedical waste in various health centres of Chandigarh, UT.

Objective:

1. To assess the knowledge and practices of Safai karamcharis regarding biomedical waste management in various health centers.

Methodology:

Present study was conducted in the dispensaries of UT Chandigarh. A community based cross sectional study was conducted in all the dispensaries' including veterinary dispensaries under DHS and in the two health centres (UHTC-44 and RHTC- Palsora) under Govt. Medical College, Chandigarh. Aayush centres were not included in the study. Permission was taken from DHS to conduct the study in the dispensaries.

A survey of the safai karamcharis handling the biomedical waste using a scientifically prescribed Questionnaire was done. The knowledge of the participants regarding handling of biomedical waste was assessed. The practice of the participants regarding biomedical waste handling was assessed onsite and was evaluated according to the set guide of Ministry of Environment & Forest - 1998.

Information was collected using a predesigned and pretested semi-structured interview schedule. Respondents were interviewed in privacy to collect the desired information. The interview was conducted in the dispensaries and centres at flexible time keeping in view the working hours of respondents. All possible efforts were made to reduce non-responses including frequent visits. Field problems faced by survey team members during data collection were discussed time to time and solved to the extent possible. Three visits were made to each centre. All those on duty were included in study after taking consent from them. The participants were explained the purpose of the study in vernacular language

.Results

Table-1 Demographic profile of the Safai Karamcharis

Components	Number (48)	Percentage
Age		
21-30	10	20.8
31-40	02	4.2
41-50	20	41.7
>50	16	33.3
Gender		
Male	20	41.7
Female	28	58.3
Education		
Illiterate	34	70.8

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Primary		12.5
Secondary	06	16.7
	08	
Working years		
<5	16	33.3
>5	32	66.7
Nature of job		
Regular	30	62.5
Contract	18	37.5

Table-1 depicts demographic characters of Safai Karamcharis. 41.7% of the Safai Karamchari who participated in the study was in the age group of 41-50 while 33.3% were more than 50 years of age. 58.3% were females and 70.8% were illiterate. 66.7% of the participants had been in the present job for more than five years and 62.5% were in regular job.

Table- 2: Self Protective measures taken by Safai Karamcharis

Variables	**Number**	**Percentage**
Immunized		
Hepatitis B	18	37.5
Tetanus	26	54.2
Attended training on BMW management	10	20.8
Received needle stick injury	08	16.7
Steps taken after injury		
Wash hand with water	08	100
Used antiseptic	06	75
Inj TT	02	25
Protective devices available		
Gloves		83.3
Mask		66.7
Soap	40	100
	32	
	48	

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Precautions taken while handling BMW		
Gloves	20	41.7
Mask	16	25
Hand wash	26	54.2
Work carefully	14	29.2
Reasons for not using personal protective devices		
Uncomfortable	22	45.8
Not available	18	37.5
Do not feel important	08	16.7

Out of the total 48 safai karamcharis who participated in the study, 37.5% had received immunization against hepatitis B and 54.2% have been immunized against tetanus. Biomedical training has been attended by 20.8% of the participants during their service tenure. Needle stick injury has occurred to 16.4% of the safai karamcharis, out of which 100% washed the site of prick immediately with soap and water while 75% applied antiseptic on the site. 25% had also taken tetanus injection. All the safai karamcharis stated that the soap is freely available with them. 83.3% and 66.7% had commented that the gloves and mask are available to them in their health centres as self protecting devices.

41.7% and 25% of the safai karamcharis stated that they were using gloves and mask respectively. While 13 (54.2%) said that they were using soap and 29.2% said that they work carefully as a protective measure. 45.8% commented that uncomfortable feeling is the reason of not using protective devices while 37,5% gave non availability as the reason of not using protective devices. 16.75 do not feel that it is important to use personal protective devices

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Table-3: Knowledge of Safai Karamchari regarding segregation of waste

Variables	Number (n=48)	Percentage
Stationary	32	66.7
Sharps	24	50
Cotton/ Dressing	30	62.5
Infectious waste	20	41.7
Radioactive waste	00	00

Table 3 depicts the knowledge of the workers regarding segregation of waste. Segregation and disposal of stationary was correctly known to 66.7% safai karamcharis. 50% of the safai karamcharis had the correct knowledge about the disposal of sharps. 62.5% and 41.7% respectively knew about the correct disposal of cotton & dressing and infectious waste.

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Table-4: Knowledge regarding hazards of BMW due to its mismanagement

Variables	Number (n= 48)	Percentage
Environment		
Pollution	16	33.3
Poor sanitation	12	25
Bad odour	06	12.5
Diseases		
Hiv/AIDS	16	33.3
Tetanus	12	25
Infections	12	25
Hepatitis	02	4.2
Injuries		
Needle stick	16	33.3
Glass injury	12	25

Regarding knowledge related to hazards occurring due to mismanagement of biomedical waste, 33.3% commented that it affects environment by creating pollution and 25% of the participants said it causes sanitation problem. 12.5% were of the opinion that mismanagement of biomedical waste causes bad odour. About the diseases occurring due to biomedical waste, 33.3 could correctly name HIV/AIDS while 25% each could tell about tetanus and infections respectively. 33.3 Safai Karamcharis were able to tell about needle stick injuries while 25% knew about injuries due to glass.

Discussion

Biomedical waste management requires diligence and care from a chain of people, starting with nurses or doctors who use the equipment and supplies that become waste, continuing through cleaning workers who carry away waste on to offsite transport companies and finishing with technology operator responsible for ensuring that residues are disposed off in the correct way.

The objective and rationale of BMW management is to reduce waste generation, efficient collection and handling and disposal in such a way that it controls infection and provides safety to employees working in the system and ensure cost effectiveness by avoiding penalties and fines imposed by regulatory authorities.

In the present study, all the health care dispensaries and veterinary dispensaries of Chandigarh Administration were surveyed. The Safai-karamcharis working in these dispensaries who fulfilled the inclusion criteria were interviewed.

The socio-demographic profile of participants depicts that 41.7% of the Safai Karamchari were in the age group of 41-50 while and 58.3% were females. Three fourth of the participants were illiterate and 66.7% of the participants had been in the present job for more than five years.

The knowledge of Safai Karamcharis regarding hazards of biomedical waste was very less and most of them were unaware of the kind of waste generated in hospital which could be dangerous to handle. The usage of gloves and mask was the most common precaution taken by safai karamcharis followed by regular hand wash. None of safai karamcharis of veterinary dispensaries have ever received biomedical waste management training while 20.8% in other dispensaries have received training. Soliman SS et al[6], Boss et al[7] also observed the lack of training

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of the staff in their respective studies. The immunization status of the Safai Karamcharis was also poor. 37.5% had received immunization against hepatitis B and 54.2% have been immunized against tetanus in dispensaries. 20% and 40% of safai karamcharis in veterinary centres were immunized against the hepatitis B and tetanus respectively. Similar findings were also seen in the study of De Silva et al[8]. Needle stick injury has occurred to 16.4% of the safai karamcharis in health dispensaries. But this was quite high in veterinary dispensaries (50%). Reason may be that they are helping the doctor or veterinary inspector while giving injections to animals. All the safai karamcharis stated that the soap is freely available with them. The knowledge regarding mask and gloves protective devices was quite high. 83.3% and 66.7% had commented that the gloves and mask are available to them in their centres. 41.7% and 25% of the safai karamcharis stated that they were using gloves and mask respectively. While 13 (54.2%) said that they were using soap and 29.2% said that they work carefully as a protective measure.

45.8% commented that uncomfortable feeling is the reason of not using protective devices while 37.5% gave non availability as the reason of not using protective devices. 16.75 do not feel that it is important to use personal protective devices.

Lack of segregation practice, result in mixing of hospital wastes with general waste making the whole waste stream hazardous. Inappropriate segregation ultimately results in an incorrect method of waste disposal. The correct knowledge and practices of segregation was lacking in Safai Karamchais of Veterinary dispensaries. This may be due to the non availability of coloured bins and bags. Most of them were using boxes or other containers as bins. The knowledge was better in health care dispensaries where 66.7% knew about disposal of stationary and 50% about the disposal of sharps. But the correct knowledge regarding disposal of sharps is much less than the study conducted by Kalia et al.[9] Regarding radioactive waste disposal none had any idea. This may be due to the fact that radioactive waste materials is generated in radiotherapy unit which is not there in dispensaries so safai karamcharis in the health centres do not handle such waste.

Mismanagement of biomedical waste results in many hazards. 33.3% commented that such waste can have bad effect on the environment in the form of pollution and bad odour. About the knowledge regarding the diseases occurring from such waste, only 33.35 could name HIV/AIDS while one fourth could tell about tetanus and infections respectively. In another study by Sehgal[10] the correct knowledge about diseases occurring from bio-medical waste was seen in 20%. The knowledge may be poor because of low literacy level. 33.3 Safai Karamcharis were able to tell about needle stick injuries while 25% knew about injuries due to glass.

Continuous monitoring and evaluation is necessary to ensure that policies and procedures are followed. Even a small proportion of badly managed waste can be potentially dangerous. The WHO acknowledges this as a problem, and observes that the human element is as important as technology in waste management.

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