KNOWLEDGE, ATTITUDE AND PRACTICES ON BIO MEDICAL WASTE MANAGEMENT AMONG THE HEALTH CARE PERSONNEL OF SELECTED HOSPITALS IN DHAKA CITY

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Abstract

Background: Biomedical wastes pose a serious public health problem. The problem is getting worse with the increasing number of hospitals, clinics and diagnostics laboratories in Dhaka city. Inadequate and improper technique may cause serious health hazard and environmental pollution. The study aimed to determine the status of knowledge, attitude and practices regarding biomedical waste management among healthcare personnel of selected hospitals in Dhaka Bangladesh.

Methods: A cross sectional study was conducted at selected hospitals in Dhaka city. A total of 234 health care personnel including 71 doctors, 67 nurses, 38 medical technologists and 58 cleaners were randomly selected for interviewing.

Results: The results showed that excellent level of knowledge, attitude and practice was found among doctors, nurses and medical technologists except the cleaners. Cleaners also found ignored in terms of training and vaccination.

Conclusion: It can be concluded from the present study that poor levels of knowledge attitude and practice among cleaners regarding biomedical waste management of BIRDEM General Hospital and BIHS General Hospital in Dhaka city. Lack of adequate knowledge impedes the waste management. Periodic training and monitoring on biomedical waste management for all categories of hospital staff is required.

Keywords:
Biomedical waste, Knowledge. Attitude, Practice and Management.

1. INTRODUCTION:

Bio-Medical Waste (BMW) management is of utmost importance as its improper management poses serious threat to health care workers, waste handlers, patients, care givers, community and finally the environment (Pandey A et al., 2016, Klangsin P, Harding A, 1998). The rapid increase of hospitals, clinics, diagnostic laboratories etc in Dhaka city exerts a tremendous impact on human health ecology by wastes generation. More than 600 clinics and hospitals exist in the Dhaka city. These facilities generate an estimated 200 tons of waste a day (Klangsin P, Harding A, 1998). One research calculated that about 22.6 percent of generated wastes among 60 out of 68 the then existing Health Care Establishments of Dhaka city are hazardous (Hassan MM et al., 2008). In Bangladesh, about 92927 health man power is working at different level government health care facilities and around same at non-government level (Human Resource Development, 2012). But most of them are not fully aware regarding the proper waste management (Akter N et al., 2002)

2. METHODS AND MATERIALS:

A cross sectional study was conducted at selected hospitals (BIRDEM General Hospital and BIHS General Hospital) in Dhaka city. A total of 234 health care personnel including 71 doctors, 67 nurses, 38 medical technologists and 58 cleaners were randomly selected from the lists of health care personnel having minimum two years of experience obtained from the competent authority of the hospitals. A pretested semi-structured questionnaire was used for data collection, the questionnaire included questions regarding general information on hospital, color code, segregation and disposal of bio medical wastes and training for bio medical wastes handlers. The collected data were analyzed by computer statistical software program (SPSS version 16).

3. RESULTS:

In order to ascertain the status of knowledge, attitude and practice on Biomedical Waste Management among the 234 Health care personnel of selected hospitals in Dhaka City a cross-sectional study was conducted.

Table 1 illustrates the Socio-demographic characteristics of respondents. Majority of the respondents, i.e. 28.6% were in the age group of 31 - 35 years and mean age of the respondents were 40.80±9.907 years. Female were dominated among the respondents (56.4%). Among the respondents 30.3 % were doctor, 28.6% were nurse, 16.2 % were medical technologists and 24.8% were cleaners. Among the respondents 40.6% indicated the duration of their service as less than 10 years, 28.6% had 6 to 10 years, 15.4% had 11 to 15 years and 15.4% had professional experience for above 15 years.

Analysis of data on the basis of knowledge, attitude and practices **(Table 2)** revealed that doctors, nurses and medical technologist have better knowledge than cleaners regarding biomedical waste management. All doctors, 95% nurses, 86% medical technologists and 79% cleaners of the present study were agreed about hazardous of biomedical waste. Knowledge regarding the separate color coding containers and waste segregation at source was found to be better among nurses and medical technologist as compared to doctors and cleaners. As knowledge on waste disposal container for human anatomical parts and infected materials 97% doctors, 73% nurses, 57% medical technologists and only 32% cleaners answered as yellow container. For general waste like pieces of paper, boxes, food wastes, 98% doctors, 79% nurses, 68% medical technologists and 34% cleaners answered as black container. For recyclable waste all participated doctors, 98% nurses, 94% medical technologists and 77% cleaners answered as green container. For radioactive waste 94% doctors, 77% nurses, 73% medical technologists and 34% cleaners answered as silver color container. For used water, Vomit, Cough, Serum, coagulated blood 91% doctors, 97% nurses, 78% medical technologists and 31% cleaners answered as blue color container. For Sharp waste all participated doctors and nurses, 97% medical technologists, 86% cleaners answered as red color container. Knowledge regarding the impending of diseases transmitted through biomedical waste was observed among only 36% cleaners. It was also found that all participant doctors, 85% nurses, 84% medical technologists and only 17% cleaners had the idea about identification of bio-hazard symbol. In this study it was also found that almost all participants showed positive attitude towards bio medical waste management. On the issue of use proper color coding bin to dispose waste 84% doctors, 95% nurses, 92% medical technologists and 31% cleaners are aware about this. 56% doctors, 98%

nurses, 92% medical technologist and 94% cleaner opined that biomedical waste management increases their burden of work.

Regarding practices related to biomedical waste management, disposal of expired drug in black color container all participated doctors, 89% nurses, 65% medical technologist and 32% cleaners answered correctly. Disposal of used gauze pieces in yellow color container 94% doctors, 98% nurses, 78% medical technologist and 44% cleaners gave appropriate answer. In this study 84% doctors, 92% nurses, 84% medical technologist and only 36% cleaners were aware about discarding of used needles by hub cutter. All participant including doctors, nurses, medical technologists but only 48% cleaners were wearing gloves during handling of hospital waste.

On (Table 3) regarding training on biomedical waste management and Vaccinated for Hepatitis-B, It was reported that among the participants of the study 94% of Doctors, 59% of Nurses, 73% of Medical Technologist and only 20% Cleaners attend training on BMW management and 91% Doctors, 79% Nurses, 76% Medical Technologist and 17% Cleaner were found vaccinated for Hepatitis-B.

4. DISCUSSION:

In order to ascertain the status of knowledge attitude and practices of doctors, nurses, medical technologists on biomedical waste management is better than cleaners. The current study revealed that around 80% study participants were found agreed that biomedical waste is hazardous and should be segregated at source. Most of the respondents had knowledge on separate color coded containers for its disposal and management. In identifying the color code for waste disposal container, difference was observed among the respondents. Almost all the doctors, nurses, medical technologists could mention properly the different color code for different type of biomedical wastes. In answering this issue around 30% of the cleaners could provide correct answer except for recyclable waste and sharp wastes. This might be due to available and large number of green and red container seen by them in their work place. The same scenario was also found in case of on the issue of proper discarding of needles. It was also found that only 17% cleaners had the idea about bio-hazard symbol and only 36% cleaners had knowledge on disease transmission through biomedical waste. Low level of knowledge among the cleaner might be due to their low educational level also. The studies conducted by Mathur

and associates (Mathur V et al., 2011) in Allahabad, Shafee and associates (Shafee M et al., 2010) in Andhra Pradesh and Sharma and associates (Sharma P et al., 2016) in New Delhi, India findings were also found similar in this respects. Study by Mathur and associates showed that knowledge regarding the color coding and waste segregation at source was found to be better among nurses and laboratory staff as compared to doctors. Shafee and associates showed that nurses had a statistically significantly better knowledge than the technical and cleaner. About half of their study nurses and technicians knew about BMW correctly. But 70.6% of them had idea about segregation of BMW, and 95.8% had knowledge about various health problems caused by BMW. Sharma and associates showed that proper knowledge about identification of bio-hazard symbol was found among 90.7%, regarding disease transmission among 82.9% and regarding segregation among 76.6% of participants. But study conducted by Saxena and Rathore (Saxena k, Rathore K, 2015) showed that there no such difference of knowledge on Bio Medical Waste Awareness among Doctor (80%, Nurse (83%), Ward attendant (78%) and Housekeeping staff (74%). Another study (Sharma A et al., 2013) conducted in Jaipur India showed that 25% Dentists, 36% Nurses, 40% Lab technicians and 45% Class IV employees had poor level of knowledge on biomedical waste generation, hazards.

This current study also tried to reveal the attitude of the study participants towards biomedical waste management. It was found that almost all the participant doctors, nurses, medical technologists and cleaner showed positive attitude. But the issue was found as increase burden of work by most of the participants except doctors opined that biomedical waste management increase their burden of work. On the attitude towards awareness about use proper color coding bin to dispose waste most of the doctors, nurses and medical technologists showed positive awareness, but only 31% cleaner were aware about this. Study by Shafee and associates found that the nurses had significantly positive attitude than technicians and the housekeeping staff. Highest overall scores for attitudes to waste disposal was observed among housekeepers than physicians or laboratory technicians by Author and Gangawane (Author S and Gangawane A, 2017) in Gujrat.

Regarding practice, this study found that majority of the study participants except cleaners disposes expired drug, used gauze, used needles in proper place and wear gloves during handling

of hospital waste. In this respect cleaners could not show proper way in disposing the waste materials. Shafee and associates found that nurses practiced BMW management better than the technical and housekeeping staff. Similar experience was also observed by Mathur and associates and Gupta associates (Mathur V et al., 2011and Gupta V et al., 2015).

This study reports that most of the doctors, nurses and medical technologists but only 20% cleaners received training on BMW management. In terms of training lower level workers are always neglected. (Malini A and Eshwar B, 2015). It was also found only17 % cleaners were vaccinated for Hepatitis-B.

5. CONCLUSION & RECOMMENDATION:

The current study concludes that excellent level of knowledge, attitude and practice was found among doctors, nurses and health technologists except the cleaners. Cleaners also found ignored in terms of training and vaccination. Periodic training and monitoring on biomedical waste management for all categories of hospital staff is required.

6. ACKNOWLEDGEMENT:

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Table:

Table 2: Distribution of respondents by Socio-demographic characteristics

	Frequency	Percent
Age group		
20 - 25 years	24	10.3
26 - 30 years	55	23.5
31 - 35 years	67	28.6
36 - 40 years	52	22.2
41 - 45 years	20	8.5
Above 45 years	16	6.8
Mean 40.80±9.907 years		
Sex		
Male	102	43.6
Female	132	56.4
Designation		
Doctor	71	30.3
Nurse	67	28.6
Medical Technologist	38	16.2
Cleaner	58	24.8
Job Experience		
2 - 5 years	95	40.6
6 - 10 years	67	28.6
11 - 15 years	36	15.4
Above 15 years	36	15.4
Mean 8.82±6.308 years		

Table 3: Distribution of health care personnel on the basis of knowledge, attitude and practices regarding bio-medical waste

Knowledge , attitude and practices variables		Doctors (n=71)	Nurses (n=67)	Medical Technologists (n=38)	Cleaners (n=58)
Knowledge	Biomedical waste is hazardous	71 (100%)	64 (95%)	33(86%)	46 (79%)
	Biomedical waste is segregated at source	65(91%)	66 (98%)	36 (94%)	40 (68%)
	knowledge of separate color coding containers	67(94%)	67 (100%)	37 (97%)	46 (79%)
	knowledge on waste disposal container	Yellow(Human anatomical parts and infected materials)	69 (97%)	49 (73%)	22 (57%)	19 (32%)
		Black (Pieces of paper, boxes container, food wastes)	70(98%)	53 (79%)	26 (68%)	20 (34%)
		Green (Recyclable waste)	71(100%)	66 (98%)	36 (94%)	45 (77%)
		Silver (Radioactive waste)	67(94%)	52 (77%)	28 (73%)	20 (34%)
		Blue (Used water, Vomit, Cough, Serum, coagulated blood)	65(91%)	65(97%)	30 (78%)	18 (31%)
		Red (Sharp waste)	71 (100%)	67 (100%)	37 (97%)	50 (86%)
	Identification of bio-hazard symbol	71 (100%)	57 (85%)	32 (84%)	10 (17%)
	Diseases transmitted through BMW	71 (100%)	64 (95%)	36 (94%)	21 (36%)
Attitude	Awareness about use proper color coding bin to dispose waste	60(84%)	65 (95%)	35 (92%)	18 (31%)
	BMW management increases burden of work	40 (56%)	66 (98%)	35 (92%)	55 (94%)
practices	Disposal of expired drug in black color container	71 (100%)	60 (89%)	25 (65%)	19 (32%)
	Disposal of used gauze piece in yellow color container	67 (94%)	66 (98%)	30 (78%)	26 (44%)
	Discarding of used needles by hub cutter	60 (84%)	62 (92%)	32 (84%)	21 (36%)
	Wearing gloves during handling of hospital waste	71 (100%)	67 (100%)	38 (100%)	28(48%)

Table 3: Training on biomedical waste management

Training on BMW management	Doctors (n=71)	Nurses (n=67)	Medical Technologist (n=38)	Cleaner (n=58)
Training Attended	67 (94%)	40 (59%)	28 (73%)	12 (20%)
Vaccinated for Hepatitis-B	65 (91%)	53 (79%)	29 (76%)	10 (17%)