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Knowledge, Attitude and Practices of Biomedical Waste Management Among Health Care Workers in a Tertiary Care Hospital

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ABSTRACT

Background: Any waste generated in hospitals, clinics, laboratories or similar establishments during healthcare, research, testing or related procedures on human beings or animals conducted.

Materials and Methods: Total of one hundred staff consented for the interview working in different wards, ICU and OPD of the institute. They were interviewed for biomedical waste management practices. Strict maintenance of confidentiality of the participants was ensured.

Results: The decreasing order of knowledge and practice seen among the five groups was Medical officers followed by laboratory technicians, interns, nurses and sanitary staffs. The decreasing order of attitude was Medical officers followed by interns and laboratory technicians with same score, nurses and sanitary staffs.

Conclusion: The present study that there is Medical officers and interns had better understanding of BMW management than other groups. Laboratory technicians were better than nurses and sanitary staffs. Sanitary workers were highly ignorant regarding BMW management.

Keywords: Attitude, Biomedical Waste, Knowledge, Practice & Questionnaire.

INTRODUCTION

Bio Medical Waste is more dangerous which contains infectious or other hazardous materials, unless carefully managed, if not can cause serious pollution to soil, water and air. Any waste generated in hospitals, clinics, laboratories or similar establishments during healthcare, research, testing or related procedures on human beings or animals conducted. Biomedical waste (BMW) includes waste generated during diagnosis, treatment or immunization of human beings or animals or research activities or in production or testing of biological.[1] BMW handling rules have been notified in 1998 and updated in March 2016. The rules are about to guide others regarding collection, segregation, and proper disposal of waste. The amount Bio Medical Waste production ranges from 1-2 kg/bed/day in developing countries[2], which is as high as 4.5kg in developed countries.[3] 10-25% is estimated to be hazardous waste which has potential to injure, infect or harm to patients, visitors, health care personnel and to the public, which is more dangerous than other type of wastes.[4] Hazards results by Bio medical waste are environmental burden and the another important risk is problems encountered by individuals who handles the waste. The objectives of Bio Medical Waste Management are to effective

reduction of waste volume, proper collection, segregation, transport and economical disposal of waste to prevent harm resulting from it, retrieve reusable materials.[5] In developing countries, biomedical wastes have not received sufficient attention, hence BMW management is still a challenge to the hospitals.[6] This study has been carried out to assess the knowledge, attitude and practice of BMW management among HCWs in our tertiary care hospital. This study also compared the KAP values between various groups and detected the degree of correlation between KAP values within each group.

MATERIALS AND METHODS

This was a cross-sectional study conducted in department of Community Medicine, Hind Institute of Medical Sciences, Lucknow, Uttar Pradesh. Study participants included nursing personnel working in different departments of the hospitals. Total of one hundred staff consented for the interview working in different wards, ICU and OPD of the institute. They were interviewed for biomedical waste management practices. Strict maintenance of confidentiality of the participants was ensured.

The interviews were conducted on a predesigned and a pretested questionnaire and checklist. The questionnaire was developed based on an extensive review of literature which can include knowledge, attitude, and practice with regards to biomedical waste management adequately. 10 minutes were given to each participant to finish the questionnaire. The data forms were collected and underwent scrutiny for logical inconsistencies, skip patterns, and missing values. The data was then coded and entered into Microsoft Excel. Descriptive and inferential statistics were applied for data analysis.

Table 1: Show the Percentage of KAP of BMW management among different groups.

Different Groups	Knowledge			Attitude			Practice		
	Good	Average	Poor	Good	Average	Poor	Good	Average	Poor
Gr-A (20)	44.2	55.8	0.0	69	25.4	5.6	54.6	32.4	13
Gr-B (20)	18	66	16	54	42.6	3.4	15	70	15
Gr-C (20)	18.4	68	13.6	25	50	25	6	45.5	48.5
Gr-D (20)	24.6	67.4	8	42.2	54.6	3.2	18	72	10
Gr-E (20)	0.0	39.2	60.8	10	70	20	5	31	64

Table 2: Shows the Mean & SD of KAP among different groups.

Different Groups	Score		
	Knowledge	Attitude	Practice
Gr-A (20)	6.21±1.82	6.54±1.84	6.23±1.54
Gr-B (20)	5.54±1.36	6.34±1.24	6.46±1.62
Gr-C (20)	4.72±1.42	5.02±1.87	5.04±1.90
Gr-D (20)	5.23±1.51	6.26±1.38	5.31±1.24
Gr-E (20)	3.22±1.35	4.62±1.52	3.61±1.68

Table 3: Correlation between Knowledge with attitude & practice.

Different Groups	Correlation coefficient (r)			
	Attitude	P value	Practice	P value
Gr-A (20)	0.45	0.04	0.52	0.01
Gr-B (20)	0.47	0.03	0.46	0.04
Gr-C (20)	0.54	0.01	0.55	0.01
Gr-D (20)	0.49	0.02	0.48	0.03
Gr-E (20)	0.50	0.02	0.51	0.02

RESULTS AND DISCUSSION

This present study carried out in the department of Community Medicine, Hind Institute of Medical Sciences, Lucknow, Uttar Pradesh. A total of 100 HCWs were included in this study. Level of knowledge, attitude, and practice regarding BMW management among the five groups were in shown in table 1.

Mean, standard deviation and correlation coefficient between the three determinants were shown in table 2 & 3. Biomedical wastes are generated from all levels of health care facilities. Segregation of biomedical waste at the point of generation not only reduces the financial expenditure for management of BMW, but also the health hazards due to handling of these wastes. BMW management system of our Institution has been analyzed using three determinants, KAP. Study participants were from various groups (group A-Medical officers, group B-interns, group C-nurses, group D-laboratory technicians and group E-sanitary staffs) belonging to our Institution.

The decreasing order of knowledge and practice seen among the five groups was Medical officers followed by laboratory technicians, interns, nurses and sanitary staffs. The decreasing order of attitude was Medical officers followed by interns and laboratory technicians with same score, nurses and sanitary staffs.(Table 1) A similar study by Mathur et al showed that doctors, nurses and laboratory technicians had a better knowledge than sanitary staffs.[7] The study by Ajai Singh et al showed that nurses had better attitude and practice of BMW management even more than doctors.[8] Another study by Madhu kumar S et al showed that nurses had better attitude than technicians and sanitary staffs.[9] In our study, Medical officers were the toppers in all three determinants and laboratory technicians had better KAP values than nurses contrary to the findings of other studies. Mean score for knowledge, attitude and practice were 4.98, 5.75 and 5.33 respectively. (Table 2) In the study done by Sengodan VC et al involving doctors and nurses, mean score for KAP were 7.74, 7.67 and 6.58 respectively.[10] Lower KAP values in our study could be due to the inclusion of sanitary staffs, the group which was not included in Sengodan VC et al study. Overall mean values of KAP have been affected by the lower scores of sanitary staffs in our study. Our study showed that

sanitary staffs had poor KAP values among all groups of health care workers which is the same as the findings in the study done by Madhu kumar S et al.[9] Involvement of sanitary staffs conveys more meaning to the study since they play an important role in the disposal of BMW. In our study, 76.02% of participants had average knowledge, which is better than the study done by Sharma A et al where 62.6% of participants had satisfactory knowledge.[11] Arora et al in their study concluded that majority of the respondents have unsatisfactory knowledge, attitude and inadequate practices related to waste management.[12] Another reason for lower KAP values in our study could be due to the changes in colour coding of bins in the year 2016, that most of the participants were unaware, which emphasizes the need for keeping themselves updated. Only 21% of our participants have received training on BMW management. The study conducted by Ananthachari KR et al, Srivastav S and Dudi M et al have shown 28%, 30% and 37% of their participants had attended BMW management training respectively.[13-15]

Correlation between the three determinants was assessed for each group. (Table 3) For Medical officers, interns, nurses, lab technicians and sanitary staffs, correlation between knowledge and attitude was 0.45;{p-value 0.04}, 0.47;{p-value 0.03}, 0.54;{p-value 0.01}, 0.49;{p-value 0.02} and 0.50;{p-value 0.02} and correlation between knowledge and practice was 0.52;{p-value 0.01}, 0.46;{p-value 0.04}, 0.55;{p-value 0.01}, 0.48;{p-value 0.03} and 0.51;{p-value 0.02} respectively. Though the KAP scores were low for nurses, they had good correlation between the parameters when compared to other groups. Medical officers and laboratory technicians had better correlation between knowledge and practice compared to knowledge and attitude, but the reverse was true with the other three groups. The study by Wai et al showed that there was a significant association between knowledge and practice with a correlation coefficient of 0.39 and knowledge and attitude with a correlation coefficient of 0.28.[16] Saini et al in their study observed a significant gap in the KAP regarding BMW disposal among HCWs.[17] Three noteworthy findings observed in our study were nurses had lower KAP values when compared to laboratory technicians, sanitary staffs were the lowest scorers and attitude of the participants regarding BMW management was good compared to other determinants. Reason for lower KAP values among nurses than laboratory technicians could be explained by the fact that majority of participants in nurses' group were newly recruited juniors, as the senior nurses who had busy work schedule were unable to participate in the study. This is supported by the study done by Ajmera V et al, which showed newly appointed nurses used colour coded bins in appropriately.[18] According to the study by Nagaraju B et al, elderly and experienced health care workers had better awareness regarding BMW management compared to the younger and less experienced ones.[19] Sanitary staffs are the group involved in disposal of BMW and they play a major role in ensuring a safe hospital environment. There are studies on KAP of BMW management which have not included sanitary staffs and studies that included them have shown that tthey had least knowledge, less favorable attitude, and poor practice in BMW management. The study by Anand P et al also found that sanitary workers had very low KAP values regarding BMW management.[20] Sanitary staffs remain as the grey area and therefore CMEs and training programs should be specifically addressed to cover this group by

means of native language and pictorial representations. HCWs of our Institution has got better attitude towards BMW management when compared to knowledge and practice. This could be due to the reason that questions on knowledge were answered only if theoretical knowledge was sound and questions on attitude were answered easily because options were of affirmative type. Awareness regarding BMW management can be increased by improving the knowledge which will positively impact the attitude and practice. As per the study done by Saini et al, people with higher education and knowledge had better attitudes towards the subject. Awareness can be improved by organizing continuous medical education (CME) program on a yearly basis. However, the study cannot be generalized due to the small size of sample and limited area as it was conducted only at twenty randomly selected tertiary health care centre. Apart from that only those health care workers who were present at respective centre during the time of visit of the investigator were included in study.

CONCLUSION

It can be concluded from the present study that there is Medical officers and interns had better understanding of BMW management than other groups. Laboratory technicians were better than nurses and sanitary staffs. Sanitary workers were highly ignorant regarding BMW management. So, a continuing medical education program on BMW is mandatory at least once in a year preferably once in a quarter to train new batches of postgraduates, interns, newly appointed health care workers and serves as an update for the existing health care workers. Apart from that, quality assessment for management of biomedical waste at centres should be routinely done from time to time.

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