

Assessment of KAP Score for Biomedical Waste Management**Mukesh Kumar¹, Prabhat Kumar Ranjan¹, Priti Singh^{1*}, Ratnesh Kumar², S.N. Singh³**¹*Tutor, Department of Microbiology, Patna Medical College and Hospital, Patna Bihar, India*²*Assistant Professor, Department of Microbiology, Patna Medical College and Hospital, Patna, Bihar, India*³*Professor & HOD, Department of Microbiology, Patna Medical College and Hospital, Patna, Bihar, India***Received: 02-10-2020 / Revised: 16-11-2020 / Accepted: 14-12-2020****Abstract**

Background: Bio Medical Waste Management works for effective reduction of waste volume, proper collection, segregation, transport and economical disposal of waste to prevent harm resulting from it, retrieve reusable materials. **Aim:** The aim of this study was to know the Knowledge, attitude, practices about BMW among Outdoor Assistants, Staff Nurses and Lab technicians. **Methods:** Total 147 subjects were selected randomly, a structured valid questionnaire of Bio Medical Waste related framed by us were distributed to them. The respondents were asked to return the questionnaire immediately after answering. All the results were entered into spread excel sheet and analyzed. Results were expressed as number, percentages. **Results:** Lab Technicians answered better than Outdoor Attendants and Staff Nurses towards KAP of Bio Medical Waste management. Out of 54 Lab Technicians, 88.8% gave correct answers to knowledge questionnaire, 79.6% and 74% responded well to attitude and practice questionnaire. Out of 147 participants, 14.2% of Outdoor Attendants, 21.7% of Staff Nurses, 32.6% of Lab Technicians gave correct answers to knowledge questionnaire. **Conclusion:** It was observed that higher education and clinical rounds are needed for paramedical staffs to increase the knowledge of bio medical waste management activities. Also very important to Create awareness and enough cognizant regarding bio medical waste management to paramedics who are going to manage bio medical waste in near future.

Keywords: Bio Medical Waste Management, Paramedics, Questionnaire.

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Introduction

Hospitals are the centre of cure and also the important centres of infectious waste generation[1]. Effective management of Biomedical Waste (BMW) is not only a legal necessity but also a social responsibility. The most common problems associated with health care waste are the absence of waste management, lack of awareness about their health hazards, insufficient financial and human resources for proper management and poor control of waste disposal to protect the environment and health of the community, the Ministry of Environment and Forestry has notified "Biomedical waste rules 1998". All hospital, clinics, nursing homes, community health centres, PHCS, laboratories have to ensure safe disposal and environmentally sound

management of waste produced by them as specified in rules for proper disposal of biomedical waste.[2] It is responsibilities of the head of health care facilities to safeguard the health of workers involved in handling, transportations and disposal of biomedical waste besides ensuring safety to the community and environment[3].The wastes are potential sources of infection transmission, especially hepatitis B and C, HIV, tetanus approximately 1.4 kg per bed per day waste is generated in Indian hospital and as high as 4.5 kg per bed per day in developed country like USA and approximately 15 % of waste is hazardous and 85% non hazardous, out of 15% of hazardous waste 5% is non infective and 10% infective (Babu et al ,2009). According to WHO (2011), the inappropriate health care waste management globally caused 21 million hepatitis B virus (HBV) infections (32% of all new infections); 2 million hepatitis C virus (HCV) infections (40% of all new cases); 260,000 HIV

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infections (5% of all new cases) in 2000[4]. Epidemiological studies indicate that a person who experiences one needle stick injury from a needle used on an infected source patient has risks of 30%, 1.8%, and 0.3% respectively of becoming infected with HBV, HCV and HIV. The Nurses spend maximum time with patients in the ward than any other member of the health team, it increases their exposure and risk to the hazards present in hospital environment, mainly from Bio-Medical Waste[5]. They need to be well equipped with latest information, skills and practices in managing this waste besides reducing hospital-acquired infections to protect their own health. They are also responsible for preventing risk due to waste to the other members of health team and community at large (AFACFO, 2002). The improper management in bio-medical waste causes environmental problems that causes to air, water and land pollution. It has been found that one third of sharp injuries are related to disposal process. Investigator experienced that most of nursing staff had limited knowledge about bio medical waste management. So there is a need to up-to-date their knowledge and practices of bio medical waste management. So investigator felt that awareness through teaching programme is effective way for nursing students to equip themselves with latest information about skills and practices in biomedical waste management, which help them to work effectively in the hospital. Although, there is an increased global awareness among the staff nurses about the hazards and also appropriate management techniques but the level of awareness in India is found to be unsatisfactory, so sound knowledge and safe practices among all staff nurses need to be strengthened. Therefore the aim of the study was to assess the Knowledge regarding biomedical waste management among the Outdoor Assistants, Staff Nurses and Lab Technicians of Patna Medical College And Hospital, Patna. So that, the current status of awareness regarding BMW management will help the authorities to develop the strategy for improving the situation in future.

Materials and methods

After Institutional ethical committee approval, a prospective cross sectional study was undertaken at the Department of Microbiology, at Patna Medical College and Hospital, Patna. for a period of two years (2019 & 2020). In the present study to assess the knowledge, attitude and practice of Biomedical Waste management, the Outdoor Assistants, Staff Nurses and Lab technicians were selected, as the nursing staff are more involved in direct patient care, manages various healthcare activities and also responsible for proper

disposal of Biomedical waste into various color code bags. Outdoor Assistants, Staff Nurses and Lab technicians were selected. Prior to the study, just before distributing questionnaire to them. Purpose of the study and knowledge, attitude, practice questionnaire were explained to all selected staff.

Total 147 subjects were selected randomly, a structured valid questionnaire of Bio Medical Waste related framed by us were distributed to them. A small pilot study was conducted among residents before doing the present study to assess the reliability of questionnaire. Bio Medical Waste Management Structured questionnaire as follows:

Knowledge Questionnaire

1. Is there any Existence of rules/Act for Bio Medical Waste Management?
2. Is Color coding available for BMW?
3. Disposal of Anatomical waste into which color bag?
4. Sharps disposal has to be in which color bag?
5. What is meant by Incinerator?
6. Up to which level the bag has to fill?
7. Personal Protective Equipment includes?
8. Percentage of Infectious waste in hospitals?
9. Is it necessary to have Biohazard symbol on BMW bag?

Attitude Questionnaire

1. Is there any necessity of BMW management rules?
2. Do you feel that BMW management is compulsorily needed for healthcare delivery?
3. How often do you recommend BMW management at your in-charge wards?
4. Do you follow color coding for waste disposal ?
5. Will you advise your subordinates to follow color coding for waste disposal?
6. Will you inform to sanitary staff to transport waste once bag is full?
7. Do you think your knowledge regarding BMW management is adequate?
8. Do you think any further training required on biomedical waste management?
9. Do you suggest segregation of waste?

Practice Questionnaire

1. Soiled linen should keep in which color bag?
2. Are you using PPE while handling linen?
3. Are you practicing hand hygiene in between every activity?
4. Are you using sharps destructor/sharp destroyer?
5. Are there color code bags for waste disposal?
6. Will you inform to sanitary staff once the BMW bag is full?
7. Non-infectious waste should put in which color code?

8.Are you practicing the segregation of infectious waste and Non-infectious waste?

9.All domestic and Kitchen waste should dump into which bag?

The questionnaires were distributed to all Outdoor Assistants, Staff Nurses and Lab technicians to answer within the stipulated time. The respondents were asked to return the questionnaire immediately. All the results were entered into spread excel sheet and analyzed. Results were expressed as number, percentages.

Results

A total of 147 subjects were selected including 44 Outdoor Assistants, 49 Staff Nurses and 54 Lab technicians. Knowledge, attitude and practice of management of biomedical waste was assessed among all three groups. Positive answers to structured questionnaire gave by nursing students were tabulated in Table1. Lab technicians answered better than Staff nurses and outdoor attendants towards KAP of Bio Medical Waste management. Out of 54 Lab technicians, 88.8% gave correct answers to knowledge questionnaire, 79.6% and 74% responded well to attitude and practice questionnaire.

Table 1: Response towards KAP of Bio Medical Waste management

Bio-Medical Waste Management	Outdoor Assistants		Staff Nurses		Lab technicians	
Knowledge	21	47.7 %	32	65.3 %	48	88.8 %
Attitude	10	22.7 %	25	51%	43	79.6 %
Practice	6	13.6 %	18	36.7 %	40	74%

All Outdoor Assistants, Staff Nurses and Lab technicians shown decrease in practices when compared to attitude and knowledge. As shown in [Figure1] Outdoor Assistants have poor KAP. Out of 147

participants, 14.2% of Outdoor Assistants, 21.7% of Staff Nurses, 32.6% of Lab technicians gave correct answers to knowledge questionnaire.

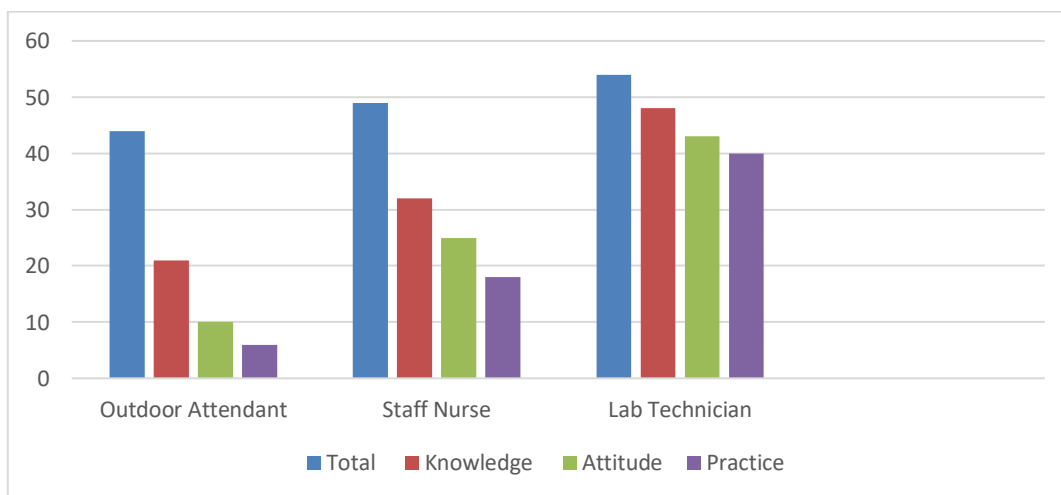


Fig 1:KAP against Bio Medical waste management

Response given by respondents to KAP questionnaire, were graded into High, intermediate and low. Response of Knowledge and attitude related to Biomedical waste management were observed better among Lab technicians when compared to Outdoor Assistants and Staff Nurses. Response to practice questionnaire was better

among both Lab technicians and Staff Nurses, were 65% and 66.6% respectively [Table 2]. It was observed that higher education and clinical rounds for paramedical staff increase the awareness of biomedical waste management activities.

Table 2: Assessment of different grades of KAP among respondents

Grades of KAP	Outdoor Assistants		Staff Nurses		Lab Technicians	
	n	Percentage	n	Percentage	n	Percentage
KNOWLEDGE						
Low	14	66.6	7	22.5	4	8.3
Intermediate	5	23.8	13	40.6	10	20.8

High	2	9.5	12	37.5	34	70.8
ATTITUDE						
Low	6	60	5	20	8	18.6
Intermediate	3	30	12	48	14	32.5
High	1	10	8	32	21	48.8
PRACTICE						
Low	4	66.6	2	11.1	6	15
Intermediate	1	16.6	4	22.2	8	20
High	1	16.6	12	66.6	26	65

Discussion

This study has undertaken mainly to assess the awareness about various aspects of biomedical waste management like knowledge, attitude and practices of disposal. Majority of doctors, residents, staff nurses are aware of bio medical waste management and its dire consequences resulted by improper disposal. Nursing staff manages the most work of the activities related with biomedical waste management. Nurses are working heavily in various high pressure departments such as operation theatres, emergency, ICU's. They have to work deliberately in wards, where there will be much work and less staff. Frankly speaking nursing staff is the backbone for biomedical waste management, they have to give advice, scrutinize the work done by sanitary staff related to bio medical waste segregation, collection and transport. In the present study, Out of 54 lab technicians, 88.8% gave correct answers to knowledge questionnaire, 79.6% and 74% responded well to attitude and practice questionnaire. Out of 147 participants, 14.2% of attendants, 21.7% of nurses, 32.6% of technicians gave correct answers to knowledge questionnaire. Response of Knowledge and attitude related to Biomedical waste management were observed better among lab technicians when compared to attendants and nurses. Response to practice questionnaire was better among both technicians and nurses, were 65% and 66.6% respectively. 66% of the subjects did not participate in segregation and recycling of solid waste as reported by Ehrampoush et al. Singh A jai et al observed 71.4% of nursing staff were practicing the do and do not of BMW management and also reported that 65% of nurses were practicing more than 70% of the correct practices as per their hospital norms.[6,7] Shamim Haider et al did a study of KAP regarding Bio Medical waste management on nursing students and staff nurses,[8] observed that knowledge related to BMW management was better among nursing students (65%) than staff nurses (33.3%) and practice activities was better among staff nurses (40%) when compared to nursing students (30%). Necessary to educate health care personnel regarding activities of BMW management. Many of the studies reported that

healthcare personnel have knowledge regarding BMW management but it has not put being practiced.[9] Few literatures mentioned that knowledge of BMW management among students is not appropriate.[6] Correlation exist between activities of BMW management and subjects knowledge.[9] It is very important to improve the skills, attitude of Bio medical waste management and encourage students to put into practice.

Conclusion

The lab technicians answered better than attendants and nurses towards KAP of Bio Medical Waste management. It was observed that higher education and clinical rounds are needed for paramedics to increase the knowledge of bio medical waste management activities. Also very important to Create awareness and enough cognizant regarding bio medical waste management to paramedical staff who are going to manage bio medical waste in near future.

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