



Knowledge, Awareness and Practices of Biomedical Waste Management Among Medical and Paramedical Personnel

KEYWORDS

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ABSTRACT

In the present study the assessment of the levels of knowledge and attitude of a total of 120 (30 males and 90 females) medical and paramedical personnel were analysed. The knowledge and awareness of biomedical waste management was assessed by a set of questions and it was found that the house surgeons and staff nurses had excellent scores with cent percent knowledge, doctors and post-graduates had excellent knowledge (85-90%) while average scores were seen among 10-15% of them. Lab technicians and sanitary health workers had excellent scores (70-75%) and rest them (25-30%) were average scorers. There was excellent attitude among 90-95% of the doctors, post graduates and house surgeons while 5-10% of them had an average attitude score. The house surgeons and staff nurses and lab technicians (80-85%) had an excellent attitude score, 10-20% of them had an average attitude score. The biomedical waste management and disposal practices were observed in various areas in the hospital. The biomedical waste handling and disposal was excellent in all the places observed. This was because of the regular, proper training sessions that were conducted in the hospital. All the members of the study have also undergone reorientation training sessions on biomedical waste management. Moreover, the good attitude among the study group helped in making the biomedical waste management a great success in the hospital.

Introduction

Biomedical waste has been defined as "any waste that is generated during diagnosis, treatment or immunisation of human beings or animals, or in the research activities pertaining to or in the production or testing of biologicals and includes categories mentioned in schedule I of the Government of India's Biomedical Waste (Management and Handling) Rules 1998" [1,2].

Hospitals generate large volumes of wastes as a by-product of a variety of health services and procedures carried out such as surgery, dressing of the wounds, dialysis, deliveries, laboratory, dental & post-mortem procedures, etc. The waste produced in the course of health care activities carries a higher potential for infection and injury than any other type of waste. Of the total hospital waste generated, approximately 10% is hazardous, 85% is general (non risk) waste while a small percentage (5%) is labelled as highly hazard. It is estimated that 10-25% of health care waste is hazardous, with the potential for creating a variety of health problems.[3]

Some years back the waste was collected in open containers without disinfection. Bandages, cotton and other items used to absorb body fluids are collected in plastic or other non-specified containers. Waste was collected in mixed form. Waste sharps discarded without disinfection and mutilation may result in their being, re-used thus spreading an infection. There were no practices of segregation of wastes. Now Legal provisions [Biomedical Waste (Management and handling) Rules, 1998] exist to mitigate the impact of hazardous and infectious hospital waste on the

community.

Now our hospital has developed the system of using colour coding bags. Most biomedical waste generated from health care facilities are at present, collected and segregation into infectious and non-infectious.[3] Different categories of biomedical waste should be collected in the specified containers/ bags at the site of generation itself.

Indiscriminate dumping of the hospital wastes into the backyards or into open municipal pits, become breeding places for disease spreading mosquitoes, flies, rodents and microbes. Epidemics can result from the contamination of drinking water and food sources with these infectious wastes, which are washed by rains.

The absence of proper waste management, lack of awareness about the health hazards from biomedical wastes and poor control of waste disposal are the most critical problems connected with healthcare waste. Therefore, it is essential to have safe and reliable method for its handling. Appropriate management of health care waste is thus a crucial component of environmental health protection, and it should become an integral feature of health care services.

The present study was undertaken for assessing the real state of knowledge, attitude, and practices of biomedical waste management among Doctors, Nurses, Laboratory technicians, and sanitary health workers. Furthermore, it will also be useful for providing appropriate education, training for the healthcare personnel for a better environ-

mental management of disposal of biomedical waste in the hospital.

Materials & Methods

This cross sectional study was conducted among Medical and Paramedical personnel at Tirunelveli Medical College from July to August 2015. A total of 120 medical and paramedical personnel involved in BMW management (20 Doctors, 20 CRRI, 20 Post-graduates, 20 staff nurses, 20 lab technicians, 20 sanitary health workers) were invited to participate in the study. Institutional Ethical Clearance was obtained before start of the study.

Data Collection:

Medical and Paramedical personnel involved in BMW management at Tirunelveli Medical College were interviewed with structured questionnaire. The information gathered by questionnaires was verified by means of personal observations and a scoring system. Before administering the questionnaire the purpose of the study was explained to all participating employees. Anonymity of the participants was maintained throughout the study.

Scores were given as follows

Excellent: 8-10 out of 10,

Good to Average: 4-7 out of 10

Poor: Less than 4 out of 10

Results

The study group included a total of 120, there were 20 doctors, 20 CRRI, 20 post-graduates, 20 staff nurses, 20 lab technicians and 20 sanitary health workers. Among the 120 members, 47 of them were in the age group of 20-30 years, 51 were in the age group of 30-40 and 22 were more than 40 years of age. In the present study out of the total 120 members 25% were males (30) and the rest 75% were females (90).

In this study, the knowledge and awareness of biomedical waste management was assessed by a set of questions and it was found that 17 (85 %) doctors had excellent knowledge while three (15%) of them had moderate knowledge about biomedical waste management. Nobody was in the poor category. Coming to the post graduate group 18(90%) of them had excellent score and 2(10%) of them had moderate score. There was no one in the poor score. All the 20 house surgeons and staff nurses were excellent scorers. Among the lab technicians 15 people (75%) came under excellent category and remaining 5(25%) were moderate scorers. The knowledge among 14(70%) of the sanitary workers were excellent and the remaining 6 (30%) were moderate scorers and no one had poor knowledge. (Table-1)

In the present study, out of the 20 doctors and postgraduates 18 (90%) of the doctors and postgraduates had an excellent attitude towards biomedical waste management and only two of them (10) % had moderate score. Among the house surgeons 19(95%) had an excellent attitude and the only one of them (5%) was a moderate scorer. Sixteen (80%) of the staff nurses had excellent attitude towards biomedical waste management and 4(20%) of them were moderate scorers. There was excellent attitude among 17(85%) of the lab technicians, two (10%) of them were under moderate category and two (10%) others had a poor attitude towards biomedical waste management. (Table-2)

In the present study the biomedical waste management handling and practices were analysed in a few places in the hospital. They include the ICCU (Intensive Cardiac Care Unit), Operation theatres, Casualty, Wards and the central laboratory. The biomedical waste handling and disposal was excellent in all the places observed. According to the observations done, in the ICCU and Operation theatres practices were excellent, the score was 80% and 90% respectively. The scores were moderate in the casualty and wards being 60% and in the central laboratory was 40%. (Table-3).

Discussion

Biomedical waste management is one of the important public health measures. Decades ago, before discovery of bacteria as cause of disease, the main focus of preventive medicine and public health were on sanitation. But today biomedical waste management plays a prime role in prevention of health hazards in the community and the environment. Hence sufficient knowledge, awareness, good attitude and correct practice of biomedical waste management are essential.

In the present study the assessment of the levels of knowledge and attitude of a total of 120 medical and paramedical personnel were analysed. Among them 25% were (males (30) and the rest 75% were females (90). Observations of the biomedical waste management practices were also done in various areas of the hospital.

In this study, the knowledge and awareness of biomedical waste management was assessed by a set of questions and it was found that house surgeons and staff nurses had excellent scores with cent percent knowledge, doctors and post-graduates had excellent knowledge (85-90%) while average scores were seen among 10-15% of them. Lab technicians and sanitary health workers had excellent scores (70-75%) and rest them (25-30%) were average scorers. There was no one in the poor category, as far as knowledge and awareness was considered. This was because of the regular, proper training sessions that were conducted in the hospital. All the above said have also undergone reorientation training sessions on biomedical waste management.

In the study conducted by Saini *et al*, eighty two percent of the subjects had awareness regarding the disposal of different types of biomedical waste. This was in par with our study. [4]. Our findings were consistent with a Nigerian study where the knowledge of healthcare waste management among the healthcare workers was high (96.7%). [5] Studies reported from, Andhra Pradesh, Maharashtra and Uttar Pradesh showed that awareness among hospital staffs regarding segregation of BMW was slightly higher in urban areas compared to rural areas and that employee training and awareness can be a major determinant of establishing optimal biomedical waste management. [6] This was justified in our study also. In a study done by Nagaraju *et al*, showed that majority 65% had an overall average level of knowledge, while 24% had a good knowledge, which differed from ours. [7] Few others studies were also in contrast to the findings of the present study [8-11].

In the present study, there was excellent attitude among 90 -95% of the doctors, post graduates and house surgeons while 5-10% of them had an average attitude score. The house surgeons and staff nurses and lab technicians (80-85%) had an excellent attitude score; 10-20% of them had an average attitude score. These findings correlated

with study done by Vanesh mathur et al. [12]. Radha et al's study also had a similar observation.[13] The assessment of practice of health care providers done by Nagaraju et al regarding bio-medical waste management differed from this study in that majority 53% had an overall average level of practice, while 35% had a good practice[7]

The biomedical waste management and disposal practices were observed in various areas in the hospital. The bio-medical waste handling and disposal was excellent in all the places observed. According to the observations done, in the ICU and Operation theatres practices were excellent, the score was 80% and 90% respectively. This may be due to the meticulous sterile practices and proper waste management by the health care personnel in those places. Similar findings were observed by Shafee et al also. [14]. Our study agrees with the study done by Sengodan et al. [15]. The assessment of practice of health care providers regarding bio-medical waste management done by Nagaraju et al revealed that majority 53% had an overall average level of practice, while 35% had a good practice. This study did not correlate with our study.[7]

Conclusion

The knowledge, attitude, and practices of doctors, nurses, laboratory technicians, and sanitary health workers regarding biomedical waste management were excellent in the present study. Bio-medical waste has a higher potential of infection and injury to the healthcare worker, patient and the surrounding community. The segregation of waste at source is the key step. Awareness programmes on their proper handling and management to healthcare workers can definitely improve the standards of biomedical waste management and prevent the spread of infectious diseases. The need of proper hospital waste management system is of prime importance and is an essential component of quality assurance in hospitals. Effective management of biomedical waste is not only a legal necessity but also a social responsibility.

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Tables

Table- 1. Levels of knowledge of BMW generation hazards among Healthcare personnel

HEALTH CARE PERSONNEL (n=120)	SCORING CRITERIA		
	EXCELLENT	GOOD TO AVERAGE	POOR
DOCTORS(n=20)	17(85%)	3(15%)	-
POST GRADUATES(n=20)	18(90%)	2(10%)	-
HOUSE SURGEONS(n=20)	20(100%)	-	-
STAFF NURSE(n=20)	20(100%)	-	-
LAB TECHNICIANS(n=20)	15(75%)	5(25%)	-
SANITARY WORKERS(n=20)	14(70%)	6(30%)	-

EXCELLENT: 8-10 out of 10

GOOD TO AVERAGE: 4-7 out of 10

POOR: Less than 4 out of 10

Table-2. Levels of Attitude of Healthcare personnel regarding BMW

HEALTH CARE PERSONNEL (n=120)	SCORING CRITERIA		
	EXCELLENT	GOOD TO AVERAGE	POOR
DOCTORS(n=20)	18(90%)	2(10%)	-
POST GRADUATES(n=20)	18(90%)	2(10%)	-
HOUSE SURGEONS(n=20)	19(95%)	1(5%)	-
STAFF NURSE(n=20)	16(80%)	4(20%)	-
LAB TECHNICIANS(n=20)	17(85%)	2(10%)	1(5%)
SANITARY WORKERS(n=20)	16(80%)	2(10%)	2(10%)

EXCELLENT: 8-10 out of 10

GOOD TO AVERAGE: 4-7 out of 10

POOR: Less than 4 out of 10.

Table-3. Biomedical Waste Management Practices observed among various areas of Hospital

AREAS OF HOSPITAL	SCORING CRITERIA		
	EXCELLENT	GOOD TO AVERAGE	POOR
ICCU	80%	----	---
OPERATION THEATRE	80%	----	----
CASUALTY	--	60%	--
WARD	--	60%	--
LABORATORY	--	40%	---

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