



Original Research Article

Knowledge, Attitude and Practices Regarding Biomedical Waste Management among the Health Care Providers at a Tertiary Care Centre in Mysore City

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ABSTRACT

Background: Biomedical waste means any waste which is generated during the course of health care activities of human beings or animals and in research activities. Thus biomedical waste is a major health hazard for the community.

Objectives: 1. To assess the Knowledge, Attitude and Practices of BMW among health care providers of a tertiary care hospital.

2. To assess the facilities available for proper BMW management.

Material & Methodology: The hospital based cross sectional study carried out in a tertiary care hospital in Mysore city. 724 health care providers who were selected using stratified random sampling technique & gave the consent to participate in the study were included. A semi structured questionnaire related to Knowledge, Attitude and Practices of Bio-medical waste management was used for data collection. The data so collected was subjected to statistical analysis using descriptive statistical methods.

Result: Among 724 participants 465(64.2%) had knowledge regarding bio-medical waste management rules and legislation, and 709(97.9%) about colour coding. Only 142(19.6%) subjects had attended training programmes on biomedical waste management. 587(81.1%) subjects were aware about treatment of waste by Incinerator. 703 (97.1%) agreed that poor disposal can be hazardous and 652 (90.1%) agreed that HIV and Hep. B can be transmitted due to poor biomedical waste management. 481 (66.4%) subjects believed that biomedical waste management increases financial burden on management and very few subjects i.e. 60 (8.3%) reported that they don't get adequate time for waste management. 718 (99.2%) were practicing segregation of waste in different categories and colour coding. 521 (72.0%) subjects were maintaining waste disposal register and 289 (39.9%) weigh the waste. Majority of the people were using protective measures during collection of waste.

Conclusion: Study subjects had good knowledge, attitude and practices of biomedical waste management and needs regular sensitization.

Key words: BMW, Knowledge, Attitude and Practice.

INTRODUCTION

Health care services produce waste at the work place with potential health

hazards. Even though the purpose is to reduce the health problems and treating sick people, these activities carry a higher risk

for infection and injury than any other type of wastes.

Although biomedical waste (management and handling) rules 1998 [1] was implemented in India to reduce the health hazards related to hospital waste, these provisions are yet to be fully implemented. The absence of proper waste management, lack of awareness about the biomedical waste, insufficient financial and human resources and poor control of waste disposal are the most critical problems connected with health care wastes. [2]

Adequate knowledge about hospital waste, proper technique and methods of handling the waste and practice of safety measures will be required for safe disposal of hazardous hospital waste and protect the health personnel and community from potential health hazards related to hospital generated waste.

Waste can be defined as any unwanted residual matter arising from the hospital or activities related to the hospital. Bio-medical waste is defined as “any solid or liquid waste including its containers and any intermediate product, which is gathered during the diagnosis, treatment or immunization of human beings or animals in research pertaining there to, or in the production or testing”. This hospital solid waste can be classified into 8 main categories; general wastes, pathological wastes, radioactive wastes, chemical wastes, infectious and potentially infectious wastes, sharps, pharmaceutical waste and pressurized containers. [3] This study was undertaken to assess the Knowledge, Attitude and Practices of BMW among health care providers of JSS Hospital & to assess the facilities available for proper BMW management.

MATERIALS AND METHODS

This hospital based cross sectional study was undertaken at a tertiary care

centre in Mysore city, from September 2013 to January 2014 (6 months). Using stratified random sampling technique percentage of nurses having correct knowledge regarding BMW management was taken for calculating sample size(61.3%), with the absolute permissible error, $d=6\%$, of ‘P’ the prevalence with a 95% confidence limit. [9] Hence 724 people were included in this study, from Hospital. Doctors (121), PGs (152), Nurses (255), Lab. Technicians (40), class 4 workers (156). After obtaining permission from the superintendent of hospital all the subjects who gave consent for the study were interviewed using a semi structured questionnaire. Facilities related to biomedical waste management in the hospital was assessed using a pretested check list.

Statistical Analysis: Data collected was entered in SPSS version 21 and analyzed using the same. Descriptive statistical measures like percentage, mean & standard deviation were applied.

RESULTS & OBSERVATION

Among 724 subjects included in the present study, only 142(19.6%) had attended training on biomedical waste management. 709 (97.9%) were aware regarding the colour coding, 624 (86.2%) were aware regarding the waste management and handling rules 2010, 709(97.9 %) were aware regarding the transmission of disease due to poor disposal of biomedical waste. 113 (15.6%) of the study subjects had responded that the biomedical waste can be stored till 48 hours [Table1].

703 (97.1%) had responded that poor disposal of waste can be hazardous for health of human being, and 652(90.1%) had knowledge that HIV can be transmitted due to improper management of biomedical waste, 98(13.5%) had mentioned that biomedical waste management guideline is not feasible to adopt, 481(66.4%) had

revealed that biomedical waste management is costly affair and 143(19.8%) disagreed, 60(8.3%) had responded that they don't get adequate time for disposal of waste, 685(94.6%) mentioned that biomedical waste management is beneficial for the prevention of disease and 13(1.8%) disagreed that it is beneficial for prevention of diseases[Table2].

718(99.2%) used Black, Yellow, Red, White/Blue colour coded bins as their

practice of disposal of biomedical waste. 539(74.4%) had responded that they empty the bins in every 12 hours. 521 (72.0%) maintain the record of disposal of waste and 289(39.9%) of the study subjects weigh the waste before disposal. And all the study subjects agreed that they are having posters regarding biomedical waste management [fig. 1]

Table 1. Distribution of study subjects based on the knowledge regarding BMW (n= 724)

Content	Yes	No	Total
Awareness regarding colour coding	709 (97.9)	15 (2.1)	724 (100)
Awareness regarding waste management & handling rules 2010	624 (86.2)	100 (13.8)	724 (100)
Awareness regarding transmission of diseases due to poor disposal of waste	709 (97.9)	15 (2.1)	724 (100)

Figures in parenthesis indicate percentages

Table2. Distribution of study subjects based on the attitude regarding Biomedical Waste Management.

Content	Agree	Don't know	Disagree	Total
Poor disposal can be hazardous	703(97.1)	7(1)	14(1.9)	724(100)
HIV can be transmitted due to improper management	652(90.1)	20(2.8)	52(7.2)	724(100)
It is not feasible	98(13.5)	105(14.5)	521(72.0)	724(100)
It is costly affair	481(66.4)	100(13.8)	143(19.8)	724(100)
Don't get adequate time	60(8.3)	25(3.5)	639(88.3)	724(100)
It is beneficial for prevention of diseases	685(94.6)	26(3.6)	13(1.8)	724(100)

Figures in parenthesis indicate percentages

Table3. Distribution of subject based on using protective measures.

Content	Yes	No	Not applicable	Total
Post prophylaxis	118(16.3)	240(33.1)	366(50.6)	724(100)
Using protective measures	232(32.1)	169(23.3)	323(44.6)	724(100)

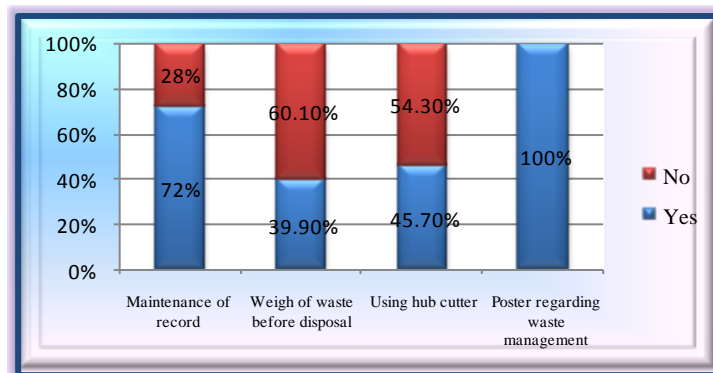


Fig 1. Distribution of the study subjects based on their practices.

331(45.7%) were using hub cutter in hospital, 118 (16.3%) had received post exposure prophylaxis for HIV / Hepatitis B in accidental prick injuries, and 366(50.6%) had not received post exposure prophylaxis due to unexposed accidental prick injuries,

232 (32.1%) used the protective measures such as surgical gloves during the collection of waste and 323 (44.6%) had responded that collection of waste is not in their practice, so there is no use of protective measures for them[Table3]. 543(75.0%) had

revealed that practice of disposing of mercury of broken thermometer is done by deep burial. 601(83.0%) had responded that fumigation is done every week in the hospital.

Findings of the study revealed that all the OPD and IPD had color coded Bins and segregation was being done in both OPD and IPD. There were no overflowing bins in hospitals. Incinerator, autoclave was there in hospital and being used. Waste generates in OPD, IPD and other places from the hospital. The quantum of waste is 1-1.5 kg /ward/day in OPD and 2-3 kg /ward /day in IPD level. The waste is not thrown outside and in public places. Waste is disposed in every 2 days.

DISCUSSION

Various studies have been conducted to assess the knowledge, attitude and practices of bio-medical waste management, so the present study discussion is being made on the basis of knowledge, attitude and practices regarding the biomedical waste management.

The present study revealed that 709(97.9%) had Knowledge regarding colour coding and transmission of diseases due to poor disposal of waste respectively. In a similar study done by Saini S. et.al [4] showed that 85% of the study subject had good knowledge regarding bio-medical waste management. In a study conducted by Mathew et al showed that (94.7%) having knowledge about colour coding and (92.7%) about biomedical waste management. [5]

The present study reveals that 465(64.2%) were aware regarding the waste management and handling rules 2010 of biomedical waste management When compared to the study results of Shalini sharma et al, a total of 569 (46.37%) persons responded to the questionnaire, of which 119 (29.53%) persons in Sarojini

Naidu Medical College Agra, 44 (51.16%) persons in Lady Lyall Maternity Hospital Agra and 26 (32.50%) persons in District Hospital, Agra were aware of the bio-medical waste (Management and Handling) rules, 1998. [6]

In this study only 142(19.6%) of the HCPs had attended training on biomedical waste management. But when compared to study done by Azage Muluken et al reported that 46.9 % of them had attended training programme This finding is incomparable with other studies in India as most HCWs were in accordance with the prescribed rules and standards of the hospital. [7] This difference could be due to the budget allocation of HCFs, the accessibility of healthcare waste management document and on job training.

The present study showed that the attitude of the health care providers i.e 703(97.1%) agreed that poor disposal of waste can be hazardous. 652(90.1%) responded that HIV can be transmitted due to improper management of waste. In study done by Azage Muluken et al showed that 99% of HCWs agreed that improperly managed healthcare wastes can transmit infection for HCWS and patients. [7]

This difference may be due to adequate knowledge of the study subjects regarding BMW management.

The study revealed, majority of subjects 718(99.2%) practiced segregation of waste in different categories, colour coding of waste.

When compared to a study conducted by Mathew et. al it was observed that the use of color coding system (93.7%) in subjects and also found that paramedical staff had better practical knowledge rather than the theoretical knowledge about Biomedical waste management. [5]

In a study done by Tuduestso Ramokate and Debashis Basu revealed that (115, 90%) treated health care risk waste

differently from health care general waste; 124 (97%) reported readily available bins for different types of HCW; 123 (96%) knew the various types of bins and used them appropriately. [8]

This difference could be explained by the ensuring of different types of containers in HCFs by responsible body and the low enforcement of the regulatory body.

The present study revealed that 521(72.0%) subjects reported that they are maintaining waste disposal register and only 289(39.9%) subjects weigh the waste before disposal. 331(45.7%) study subjects uses hub cutter , and 232(32.1%) uses preventive measures such as surgical gloves. 118(16.3%) Subjects had received post prophylaxis against HIV/ Hep.B in accidental prick injuries.

In a similar study done by Tuduestso Ramokate and Debashis Basu revealed that documents were accessible to most nurses (86, 91%) but few doctors (5, 15%) ($p<0.001$) Respondents mentioned a variety of places for storage of documents. There was a significant association between knowledge and access to documents ($p<0.001$). [8]

This difference may be due to lack of regular supervision and enforcement of standard practice by responsible body.

CONCLUSION

The study subjects had adequate knowledge about the waste management plan, waste management responsibility and rules, and colour coding of the waste management. There was poor response on training on Biomedical Waste management attended by health care providers.

The study revealed that the study subject had positive attitude regarding their acceptance, hazardous effect, feasibility to adopt the biomedical waste.

They had good practices regarding use of colour coded bins and frequency of

emptying. But their practice regarding record maintenance and weighing of waste is not adequate. Therefore the conclusion of the study is study subjects had good knowledge, attitude and practice of biomedical waste management and needs regular sensitization by training programme.

RECOMMENDATIONS

- Motivation of health care providers to attend the orientation and training programme regarding Biomedical Waste Management.
- Make use of protective measures such as puncture proof gloves, goggles, etc. as only surgical gloves are not enough to prevent accidental prick injuries.
- Regular maintenance of records regarding BMW management, and ensure the weighing of waste before disposal

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