

## INFLUENCE OF INTENSIVE TRAINING ON BIOMEDICAL WASTE MANAGEMENT IN A MULTISPECIALTY HOSPITAL

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### Abstract

**Introduction:** Though the doctors are said to have better theoretical knowledge of Bio Medical Waste, actually on ground it is the staff nurses & housekeeping staff that are considered as important employees dealing with the Bio Medical Waste. Training is considered as an important phase of the process of acquiring the capacity as it identifies the existing gaps in knowledge, attitudes and skills that affect the individual performance. With so much importance related to the training, this study was undertaken to study the influence of structured training sessions on knowledge, attitude and practice regarding Biomedical Waste Management among Nurses and Housekeeping Staff in the hospital.

**Methods:** The study was conducted in a multispecialty hospital. The data was collected with a questionnaire from nursing & housekeeping staff with two options either 'yes' or 'no'. The percentages were calculated in the two groups, one during pre-test and the second after imparting the education which becomes the post-test percentage.

**Results:** As per our results it is found that the knowledge & attitude of nurses in both section II & section III of questionnaire was better both in pre-test & post-test as compared to housekeeping staff & education has a positive influence on both nurses & housekeeping staff.

**Conclusion:** The problem of bio-medical waste disposal in the hospitals and other healthcare establishments has become an issue of increasing concern. Intensive training programs are highly recommended to deal with this burning issue of Bio medical waste management.

**Keywords:** Nurses, Housekeeping Staff, Biomedical waste Management, Knowledge, Practice, Attitude

### Introduction

Some of the present age hospitals in India have state of art medical facilities, with quality on par with global standards at a much cheaper cost thus making not only Indians to avail the private hospital facilities but also now India is considered to be a hot destination for medical tourism. In contrast to its affirmative side of being a good medical facility provider, the other side of health care services in India i.e. the Bio-medical waste management has been ignored which is considered potentially harmful. <sup>(1)</sup> As compared to global awareness among health professionals about the biomedical hazards & its management, level of awareness in India is found to be unsatisfactory. <sup>(2)</sup> This poor management of hospital waste can lead not only to increase levels of air & water pollution but also increases the risk of various diseases like HIV, Hepatitis B and C, respiratory infections & skin infections. Realizing the seriousness of the problems associated with the poor management of the bio-medical wastes, it is imperative to adopt suitable system for the safe collection, storage, transport, treatment and disposal of the hospital wastes. As

no <sup>(3)</sup> employee exactly suits the job and organizational requirements; hence training is the important tool to develop the employee and make them suitable for the job. Training is considered as an important phase of the process of acquiring the capacity as it identifies the existing gaps in knowledge, attitudes and skills that affect the individual performance. <sup>(4)</sup> Though the doctors are said to have better theoretical knowledge of Bio Medical Waste, actually on ground it is the staff nurses & housekeeping staff that are considered as important employees dealing with the Bio Medical Waste. They play effective role in implementation of bio medical waste management programs. It is the responsibility of the hospital administrators to initiate and lead the continuous training programs as the quality of their leadership is measured as to how they develop the people in the organization as per the requirement. With so much importance related to the training, this study was undertaken to study the influence of structured training sessions on knowledge, attitude and practice regarding Biomedical Waste Management among Nurses and Housekeeping Staff in the hospital.

**Material and methods:**

The study setting was done in multispecialty Rao Nursing Home Pune. The study was done in Feb 2017. The study was designed to give an input of knowledge of staff which includes nurses and housekeeping staff based on questionnaire. The questionnaire was divided into three parts. The section I of questionnaire consisted of questions on personal and professional data including age, gender, qualification, total years of experience etc. The section II of questionnaire contained 15 questions on assessment of knowledge regarding biomedical waste management. The section III of questionnaire contained 5 questions based on the behavioral of the staff towards handling of the biomedical waste. The answer of section II & section III questions were either yes or no. Total 60 sets of questionnaire were distributed among nurses and housekeeping staff working during different shifts in the

hospital. Questionnaire was provided in English, Hindi and Marathi depending upon which language the individual understands. The respondents were asked to return the questionnaire immediately.

After getting the pretest percentages of various questions training session was started. Training session consisting of lectures in morning session, demonstration in the afternoon & with a session on Biomedical Waste Management with involvement of hospital administrators, doctors & nursing supervisors. Special emphasis was given on elaboration of the rules and regulations, demonstration of the segregation of waste and disinfection of various categories of waste. Post-test percentages of the same set of questionnaire were calculated and the comparison of the results were seen.

The study was approved by the institutional ethical committee and written consent was taken from all the subjects before they were given the questionnaire.

**Questionnaire****Section I, Section II, Section III****Section I**

Please fill the following particulars

You are -  Nurse  Housekeeping staff

Age \_\_\_\_\_

Gender \_\_\_\_\_

Highest Educational qualification \_\_\_\_\_

Total years of Experience \_\_\_\_\_

**Section II**

Level of awareness on biomedical waste management practice among nursing & housekeeping staff

**Instructions:** Among given 'yes' or 'no' options only one option is correct. Please tick the correct answer.

1. Do you know about colour -coding segregation of Bio-medical waste?

Yes  No

2. Do you follow colour-coding for Bio-medical waste?

Yes  No

3. Do you dispose cotton, gauze and other items contaminated by blood in Yellow bag?

Yes  No

4. Do you dispose Needle, blade, etc in sharp container?

Yes  No

5. Do you dispose normal waste in black bag?

Yes  No

6. Do you agree that never dispose all kinds of waste into general garbage?

Yes  No

7. Do you dispose expired medicines in yellow bag?

Yes  No

8. Do you agree biomedical waste can be stored In ICU more than 24 hours?  
Yes  No
9. Do you agree biomedical waste can be stored in main storage area more than 48 hours?  
Yes  No
10. Do you agree S. Hypochlorite 0.1% used in sharp container?  
Yes  No
11. Segregation of BMW should be first done in the storage?  
Yes  No
12. Do you agree sharp container to be filled 3/4<sup>th</sup> of total?  
Yes  No
13. Do you put I/V line stained with blood in the yellow bag?  
Yes  No
14. Cytotoxic drugs are discarded in yellow bag.  
Yes  No
15. Do you agrees to never cap the needle before disposing in sharp container?  
Yes  No

**Section III:**

Behavioral of the staff towards handling of the biomedical waste

**Instructions:** Among given 'yes' or 'no' options only one option is correct. Please tick the correct answer.

1. Do you agree that waste management is team work & no single class of people is responsible for safe management?  
Yes  No
2. Do you agree that one should not worry at all in case of accidental needle stick injury occurring while handling biomedical waste?  
Yes  No
3. Do you agree that safe management of health care waste is not an issue at all?  
Yes  No
4. Do you agree that biomedical wastes should be segregated into different categories?  
Yes  No
5. Do you feel excess burden on cutting plastic stained with blood and disposing it accordingly?  
Yes  No

**Thank you for your valuable time and cooperation.**

**Results:**

The results are depicted in Table 1 & Table2

**Table1: Percentage of compliance about Biomedical waste Management in both pre-test & post-test among Nurses & Housekeeping Staff**

Question	Percentage of compliance about Bio Medical Waste Management among Nurses (Pre-test) N=30	Percentage of compliance about Bio Medical Waste Management among Nurses(Post-test) N=30	Percentage of compliance about Bio Medical Waste Management among housekeeping staff (Pre-test) N=30	Percentage of compliance about Bio Medical Waste Management among Housekeeping staff (Post-test) N=30
Do you know about color-coding segregation of Bio Medical Waste(BMW)	100%	100%	100%	100%
Do you follow colour-coding of BMW	100%	100%	100%	100%
Do you dispose cotton, gauze & other items contaminated by blood in Yellow bag	96.66%	100%	10%	63.33%
Do you dispose needle, blade etc in sharp container box	100%	100%	6.66%	96.66%
Do you dispose normal waste in black bag	100%	100%	86.66%	100%
Do you dispose all kinds of waste never into general garbage	66.66%	80%	96.66%	96.66%
Do you dispose expired medicines in Yellow bag	80%	86%	80%	85%
Do you agree biomedical waste can be stored in ICU more than 24 hours	97%	100%	66.66%	83.33%
Do you agree biomedical waste can be stored in main storage area more than 48 hours	94%	96%	93.33%	96.66%
Do you agree Sodium hypochlorite 1 % to be used for sharp container	33.33%	86.66%	3.33%	86.66%
Do you agree BMW segregation should be first done in storage area	73.33%	93.33%	70%	86.66%
Do you agree sharp container to be filled 3/4 <sup>th</sup> of total	56.66%	76.66%	23.33%	76.66%
Do you put I/V line stained with blood in Yellow bag	63.33%	80%	53.33%	66.66%
Cytotoxic drugs are discarded in Yellow bag	83.33%	96.66%	80%	86.66%
You should never cap the needle before disposing in sharp container	100%	100%	93.33%	93.33%

**Table 2: Percentage of compliance about behavior to Biomedical waste Management (BMW) in both pre-test & post-test among Nurses & Housekeeping Staff**

Question	Percentage compliance of nursing staff about behavior to BMW management (Pre-test) N=30	Percentage compliance of nursing staff about behavior to BMW management (Post-test) N=30	Percentage compliance of housekeeping staff about behavior to BMW management(Pre-test) N=30	Percentage compliance of housekeeping staff about behavior to BMW management(Post-test) N=30
Do you agree waste management is team work	93.33%	96.66%	90%	96.66%
Do you agree that one should not worry at all in case of accidental needle stick injury while handling biomedical waste	53.33%	53.33%	3.33%	36.66%
Do you agree safe management of health care waste is not an issue at all	83.33%	90%	20%	33.33%
Do you agree BMW should be segregated into different categories	96.66%	100%	96.66%	100%
Do you feel excess burden on cutting plastic stained with blood & disposing it accordingly	53.33%	73.33%	46.66%	66.66%

As per our results it is found that the knowledge & attitude of nurses in both section II & section III of questionnaire was better both in pre-test & post-test as compared to housekeeping staff. The training imparted to nursing & housekeeping staff has a positive impact on compliance related to Bio medical waste management & also towards their behavior for Bio medical waste management.

#### Discussion:

Proper management of Bio medical waste is a concern that has been recognized by both government agencies and the non-government organizations. The Staff dealing with Biomedical Waste should have thorough knowledge about it. In view of the low awareness level among different category of staff, especially the staff directly involved in dealing of the biomedical waste management there is a need for education as to the hazards and other problems associated with improper waste disposal.

In our study we found that the housekeeping staff has less knowledge about dealing with the Biomedical waste as compared to the nursing staff, this is in accordance with the study conducted by Nataraj et al in a teaching hospital in Bombay, which also concluded that housekeeping staff & laboratory staff had least knowledge & practice about Bio medical waste management.<sup>(5)</sup>

Our study is also in accordance to the study conducted by Kishore et al<sup>(6)</sup> in Delhi which states that nurses have more knowledge of Biomedical waste than laboratory staff as they are directly involved in the patient care.

In our study it was found that there is great impact of knowledge on Bio medical waste management, which is in accordance with the study conducted by Pullishery et al<sup>(7)</sup> using nursing student in selected college of Mangalore which shows there is a significant difference between pre-test & post-test knowledge scores in all the areas as well as overall knowledge on Biomedical waste management [p<0.001]

The limitations of this study are small sample size as all nursing staff & housekeeping staff was not included because of their duty schedule. Some of the participants were not keen for responding as they had a fear that the results would be disposed to the senior management.

From our study it is recommended that intensive training programs at regular time interval for all staff with special orientation programs for the new comers.

#### Conclusion:

The problem of bio-medical waste disposal in the hospitals and other healthcare establishments has become an issue of

increasing concern. It is worth giving appropriate time to make the hospital environment clean, healthy & free from infection. Hence intensive training programs regarding handling, segregation, transportation, storage of waste in colour bins until final disposal and treatment for the on ground working staff is highly recommended to deal with this burning issue of Bio medical waste management.

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