



## Impact of training on knowledge regarding bio medical waste management among health care workers of primary health care of Belgaum.

### KEYWORDS

Bio medical waste, impact of training, health care workers.

**Poornima M P**

Assistant Professor, Department of Community Medicine, J.J.M. Medical College, Davangere.

### ABSTRACT

**Introduction:** Proper management of bio medical Waste - significant concern for both the medical and the general community. Improper management of bio medical waste - direct health impact on the health care workers, community and on the environment. Lack of segregation practices at source - Increase in bulk of waste to be disposed. Hence the present study - to know the effectiveness of training program in enhancing the knowledge regarding bio medical waste management.

**Objectives:** To study the impact of training on knowledge regarding Bio medical Waste management among health care workers.

**Methodology:** By using a predesigned & pretested schedule. Statistical analysis was done using percentages and Chi square test.

**Results:** Statistical significant difference were found between points received by all hospital staff in the preliminary test and final test ( $p < 0.05$ ). The study disclosed that the points received by participants were higher in post training test in comparison to pre training test.

**Conclusions:** Gain in the knowledge regarding practical aspects of biomedical waste, may have future implication in appropriate management of biomedical waste.

### INTRODUCTION

Proper management of bio medical Waste - significant concern for both the medical and the general community. Improper management of bio medical waste - direct health impact on the health care workers, community and on the environment. The untreated waste poses significant health risk to patients, visitors, care givers and community as a whole. The waste generated in hospital has been categories in various subtypes like, of the total waste 85 % is non infectious while 10% is infectious and 5% hazardous.<sup>1</sup>

WHO estimated that, contaminated injections with contaminated syringes caused- 21 million hepatitis B virus (HBV) infections (32% of all new infections). Two million hepatitis C virus (HCV) infections (40% of all new infections) 260 000 HIV infections (5% of all new infections).<sup>2</sup> WHO assessment conducted in 22 developing countries in 2002 - the proportion of health-care facilities that do not use proper waste disposal methods ranges from 18% to 64%.<sup>3</sup>

Risk of infections transmitted due to unsafe health practices

Hepatitis B	3%
Hepatitis C	3-5%
HIV	0.3%

Lack of segregation practices at source - Increase in bulk of waste to be disposed. Hence it is imperative to segregate the waste at the site of generation or at the location of their use. When such waste is not properly treated and managed then it create various public health issues that is the reason the waste as generated must be segregated as per the class it belongs to. It is not the segregation which is important the process of collection, transportation, treatment and final disposal of biomedical waste are mandatory as per the biomedical waste (management and handling) rules 1998 which are amended in 2000 and 2003.<sup>4</sup> Hence the present study - to know the effectiveness of training program in enhancing the knowledge regarding bio medical waste management.

**Objectives:** To study the impact of training on knowledge and practice regarding Bio medical Waste management among health care workers.

### METHODOLOGY

The present study was conducted at six (06) Health Center (3PHC and 3 UHC), Handignur, Vantmuri, Kinaye, Ashoknagar UHC, Ramnagar UHC and Rukmininagar UHC, which are field practice area of Department of Community Medicine, Jawaharlal Nehru Medical College, Belgaum. Study design - Intervention study. Study period: September 2014 - October 2014 Sample size: 64 Health care

personnel (Universal sample.) Ethical clearance: Obtained from ethical committee. Statistical Analysis: Paired t test using SPSS software. A one-day training session was conducted in all 6 Health centers on separate days. Pre test questionnaire was administered. Discussion regarding different aspects of biomedical waste like definition, categories, color coding and final disposal etc was done. Post test questionnaire was administered at the end of the discussion. Enhancement in the knowledge was assessed by comparing Pre and post test results by using paired t test.

### Results:

Of the total 64 participants, 06 Medical Officers, 06 Senior Health Assistants, 03 pharmacist, 06 Sr Health Assistant, 04 Lab Technicians, 26 Junior Health Assistants, 07 Class D workers, and 12 interns were enrolled in study. 35 were female 29 were male. 26(40.62%) has previous experience of working in hospital and dealing with biomedical waste for more than five years and 59.4% had work experience for less than five years.

Statistical significant difference were found between points received by all hospital staff in the preliminary test and final test ( $p < 0.05$ ). The study disclosed that the points received by participants were higher in post training test in comparison to pre training test. The number of correct answers was increased in post training session and it is concluded that knowledge level of all participants of study has increased as a result of training.

Of the participants 24 of them had previously underwent biomedical waste training and 40 of them didn't undergo biomedical waste training. It was revealed that 56 % of nursing staff 23% of medical staff 68% of housekeeping staff had not received training on biomedical waste management. In the study it was also observed that those participants who have not received any previous training on the subject in pre training and post training test scored lower than those who have received previous training on the subject of biomedical waste management.

**Table 1:** Distribution of knowledge scores of subjects regarding biomedical waste management.

Category	Pre test average score	Post test average score	Increase in mean score	Paired t	Sig 2 tailed (p value)
Medical officer	13±0.89	14±0.62	1±0.63	1.265	0.012
Senior Health assistants(M&F)	6.5±2.07	12.1±1.47	5.6±2.06	5.236	0.001
Pharmacist	8.3±1.15	11.6±1.52	3.3±2.08	2.774	0.109

Lab technicians	8.7±2.06	14.2±0.95	5.5±1.91	5.745	0.010
Jr. Health assistants (F)	6.6±1.57	11.7±1.21	5.1±1.09	19.962	0.001
Jr. Health assistants (M)	6.3±0.67	11.8±1.22	5.5±1.08	16.102	0.001

**Table 2:** Distribution of practice scores of subjects regarding bio-medical waste management

Category	Pre test average score	Post test average score	Increase in mean score	Paired t	Sig 2 tailed (p value)
Medical officer	8.5±1.04	10	1.5±0.42	3.503	0.017
Senior Health assistants(M&F)	5.667±1.21	7.5±0.83	1.833	2.803	0.038
Pharmacist	6±1.73	9±0	1.73	3±0	0.095
Lab technicians	7.25±0.5	7.5±1.29	1.25	0.397	0.718
Jr. Health assistants (F)	6.44±1.58	7.77±1.11	1.49	3.78	0.001
Jr. Health assistants (M)	5±1.24	7.5±0.84	1.71	4.607	0.001
Class D	7.28±2.05	9.14±0.89	1.57	3.122	0.021
Interns	7.3±1.56	9.4±0.69	1.72	3.841	0.004

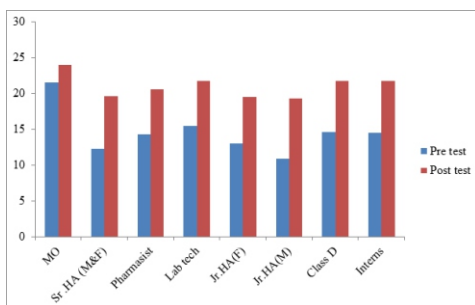
**Table 3:** Pre and post test mean scores of the participants

Category	Pre test	Post test	Mean increase	Paired t	p value
Knowledge	7.2 ± 2.33	12.6± 1.48	5.4± 2.18	19.87	<0.001
Practice	6.5±1.72	8.3 ± 1.25	1.7± 1.5	8.87	<0.001

**Results: Table 4:** Improvement in knowledge of the participants based on their designation

Category	Pre test average score	Post test average score	Increase in mean score	Paired t	df	Sig 2 tailed (p value)
Medical officer	21.5±1.87	24 ± 0.63	2.5±1.37	4.443	5	0.007
Senior Health assistants	12.3±2.58	19.6±2.16	7.3±3.07	5.838	5	0.002
Pharmacist	14.3±0.57	20.6±1.52	6.3±1.52	7.181	2	0.019
Lab technicians	15.5±1.73	21.7±2.21	6.2±1.25	9.934	3	0.002
Jr. Health assistants (F)	13±2.35	19.5±1.54	6.5±1.65	16.827	17	<0.001
Jr. Health assistants (M)	10.9±2.18	19.3±1.33	8.4±2.07	13.208	9	<0.001
Class D	14.6±2.99	21.8±1.06	7.3±2.14	9.016	6	<0.001
Interns	14.5±2.99	21.8±1.06	7.3±2.13	7.236	9	<0.001

**Improvement in knowledge of the participants based on their designation**



**Discussion:**

The waste generated in the hospital as a result of either after diagnostic or curative patient care poses potential health risk to care givers, patients, population and environment. If this waste is not segregated, collected, stored, transported, treated and disposed off by use of appropriate methods they will emerge as severe public health and environmental problems.

The onus of biomedical waste management lies with the hospital occupier. The information levels and awareness of hospital staff on the subject of biomedical waste management is very important in the process of waste management.

Knowledge about biomedical waste management rules among the technically qualified personnel like the doctors, nurses, and laboratory staff was satisfactory but was low among the attenders and housekeeping staff. This was similar to the findings from other studies.<sup>5,6,7</sup> In Gujarat, it was found that doctors were aware of risk of health hazards, whereas attenders and housekeeping staff had very poor knowledge about it.<sup>6</sup> Knowledge about colour coding of containers, and waste segregation which is most important pivotal point and crucial for further waste management, was also found to be better among the doctors and nurses as compared to that of the other staff. In the present study they were not very clear as to what should go in each coloured bin.

The study conducted by Suvarna and Ramesh in 2012 showed that medical officers and nursing staff had higher level of information then other hospital staff about biomedical waste management process.<sup>8</sup>

**Conclusions:** There is improvement in knowledge regarding all the aspects of bio medical waste management after the training. This finding give the support to thought process of importance of periodic training programme on biomedical waste management so as to fill the deficiency levels in information about subject among the hospital employees. It is therefore propose that in order to have effective biomedical waste management programme in the hospital it need to draw an effective waste management plan and have that plan continually implemented by periodic training of staff members.

Maximum gain in knowledge observed among Jr. Health Assistants (M). Gain in the knowledge regarding practical aspects of biomedical waste, may have future implication in appropriate management of biomedical waste. The importance of training has become evident in the present study that the knowledge and practice level of hospital staff was found to be more in the post training test for the staff member. It is therefore propose that in order to have effective biomedical waste management program in the hospital it need to draw an effective waste management plan and have that plan continually implemented by periodic training of staff members.

**Recommendations:**

- Hands on training on segregation practices -> behavioral change - self care, patient care and prevention of transmission of diseases.
- Compulsory training for newly appointed workers, refresher courses for senior workers is highly recommended.
- Display of charts, posters on segregation and disposal methods will have impact on right practices.

**Implications:** Early identification of risks will help in prevention and burden of disease.

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