Knowledge, Attitude, Practice regarding Hospital Waste Management among Interns & Nurses of tertiary care hospitals of Navi Mumbai

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Abstract: Hospital waste management is a burning issue and needs to be address on day to day basis. The aim is to assess the knowledge and awareness about various aspects of Bio-Medical Waste Management among interns and nursing staff working in a private hospital. 100 participants were interviewed with validated preformed, semi structure proforma. We found out that entire 100% were aware about Bio-Medical Waste; only 45% has received the training for biomedical waste management. 72% had the knowledge that regular biomedical waste record was maintained in their hospital and 93% population had the knowledge that proper segregation of biomedical waste products is done at their hospital. 60% had the knowledge about the health hazards associated with biomedical waste (HIV, Hepatitis, Needle stick injuries, Blood-borne diseases etc.). And 97% have the knowledge about the personal protective measures while handling biomedical waste products. However, only 73% population disposes sharps/needles using needle cutter, 5% disposes without needle cutter and 22% population disposes with needle covered with cap. Hence from the above data, it’s evident that if the interns or nursing staff were to be duly trained for biomedical waste management and disposal through regular training sessions or by picturesque methods then, there would be significant drop in the amount of health hazards associated with biomedical waste products. The study is first of its kind since testing the knowledge of biomedical waste of Intern doctors & nursing staff in a private & municipal hospital was never done before.

Keywords: Bio medical waste, health hazards, Needle stick injuries, Personal protective measures, Interns, Nurses

INTRODUCTION

Hospital waste management is a burning issue and needs to be address on day to day basis. The term “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 [1, 2]. Bio-Medical Waste Management and Handling Rule, 1998 prescribed by the Ministry of Environment and Forests, Government of India, came into force on July 28, 1998. This rule applies to all those who generate, collect, receive, store, transport, treat, dispose, or handle biomedical waste in any manner and also to every institution that generate Biomedical waste [3].

The objective of biomedical waste management are mainly to reduce waste generation, to ensure its efficient collection, handling, as well as safe disposal in such a way that it controls infection and improves safety for employees working in the system. The waste produced in the course of healthcare activities carries a higher potential for infection and injury than any other type of waste. Inadequate and inappropriate knowledge of handling of healthcare waste may have serious health consequences and a significant impact on the environment as well. The absence of proper waste management, lack of awareness about the health hazards from biomedical wastes, insufficient financial and human resources, and poor control of waste disposal are the most critical problems connected with healthcare waste. Between 75% to 90% of the waste produced by the healthcare providers is non-risk or general and it is estimated that the remaining 10% to 25% of healthcare waste is regarded as hazardous with the potential for creating a variety of health problems. Among all health problems, there is particular concern with HIV/AIDS, Hepatitis B and C, for which there is a strong evidence of transmission through healthcare waste [4].
Although, there is an increased global awareness among health professionals about the hazards and also appropriate management techniques but the level of awareness in India is found to be unsatisfactory [5-7]. Adequate knowledge about the health hazard of hospital waste, proper technique and methods of handling the waste, and practice of safety measures can go a long way toward the safe disposal of hazardous hospital waste and protect the community from various adverse effects of the hazardous waste. The study is first of its kind since testing the knowledge of Intern doctors & Nursing staff in a private & municipal tertiary care hospitals, urban health centre & primary health centre simultaneously was never done before.

AIMS & OBJECTIVES
To assess the knowledge and awareness about various aspects of Bio-Medical Waste Management among interns and nursing staff.

METHODOLOGY
➢ SAMPLE SIZE - 100 participants including interns and nursing staff.

➢ PLACE OF STUDY - Terna Hospital and Research Center, Nerul, Navi Mumbai; Navi Mumbai Municipal Corporation (NMMC) Hospital, Vashi, UHC, Turbhe; PHC, Ulwe.

➢ SAMPLING TECHNIQUE - Validated, pre-designed, semi-structured proforma.

➢ SUBJECT - The proforma had two parts, the first part contained socio-demographic variables like age, sex and faculty and the second part contained various aspects of Bio Medical Waste Management. Institutional ethics committee approval was taken. The participants were informed about the purpose of the study and their informed verbal consent was taken. They were assured about their confidentiality.

➢ STUDY PERIOD - March 2015 to May 2015

➢ DATA ANALYSIS – Using Microsoft Office Excel. Epi info version 7

RESULTS AND DISCUSSIONS

Table 1: Analysis of knowledge & practices of Bio-Medical Waste among participants

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Questionnaire</th>
<th>Yes</th>
<th>No</th>
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<tbody>
<tr>
<td>1</td>
<td>Received training of biomedical waste</td>
<td>45</td>
<td>55</td>
</tr>
<tr>
<td>2</td>
<td>Knowledge about symbol</td>
<td>97</td>
<td>03</td>
</tr>
<tr>
<td>3</td>
<td>Knowledge about health hazards associated with biomedical waste</td>
<td>60</td>
<td>40</td>
</tr>
<tr>
<td>4</td>
<td>Knowledge about biomedical waste products segregation</td>
<td>93</td>
<td>07</td>
</tr>
<tr>
<td>5</td>
<td>Knowledge about biomedical waste categories</td>
<td>86</td>
<td>14</td>
</tr>
<tr>
<td>6</td>
<td>Usage of personal protective measures</td>
<td>97</td>
<td>03</td>
</tr>
<tr>
<td>7</td>
<td>Knowledge about colour coding of biomedical waste</td>
<td>55</td>
<td>45</td>
</tr>
</tbody>
</table>

Graph 2 shows that all the participants (100%) have heard about Bio Medical Waste Management. But only 45% have received training for the management showing the need for timely training and updating knowledge of the staff. Jena et al.; [8], and other researches[9, 10] in their respective studies enquired about whether they have heard about the biomedical waste management and most of them heard
about it but none of the researchers have analysed their training status. In our study 93% participants had the knowledge of symbol. However, according to Research Foundation of Odisha – 67.5% participants know about biohazard symbol [8]. According to assessment conducted in a tertiary care hospital of West Bengal – 67.9% participants know about biohazard symbol [9].

According to the assessment regarding awareness of biomedical waste management among interns in a tertiary care hospital, Khammam – 65.2% participants know about biohazard symbol (75 participants/ 115 participants) [10]. It proves comparative excellent knowledge of the symbol. Table 1 shows that 60% participants had the knowledge regarding health hazard associated with biomedical waste & hooping. 40% participants were unaware about the health hazards of biomedical waste. It is a major concern regarding their own health. Lack of knowledge causes high risk behaviour & putting their own health at stake. Participants of the research study of Jena et al.; [8], Basu et al.; [9] & Fani et al.; [10] had better knowledge of health hazards of biomedical waste.

Figure 3 shows knowledge of health hazards of biomedical waste. Out of 60 participants who had the knowledge, were tasted for needle stick injuries & various diseases. Their responses regarding needle sick injuries and various diseases namely HIV, Hepatitis B& C, blood borne diseases which occur due to improper disposal of biomedical waste are displayed in the pie chart. 93% subject population have the knowledge of biomedical waste product segregation in the hospital and only 7% do not have the knowledge about the same. However, according to Research Foundation of Odisha – 30.5% participants have knowledge about BIOMEDICAL WASTE segregation at various sources (61 participants/200 participants) [8]. According to assessment conducted in a tertiary care hospital of West Bengal – 78.8% participants have knowledge about segregation of biomedical waste at various sources (157 participants/ 200 participants) [9]. According to the assessment regarding awareness of biomedical waste management among interns in a tertiary care hospital, Khammam – 65.2% participants have knowledge about segregation of biomedical waste at various sources (75 participants/ 115 participants) [10]. In our study, 86% participants had knowledge about biomedical waste categories. However, lesser percentage of participants of the research study of Jena et al.; [8], Basu et al.; [9] & Fani et al.; [10] had knowledge about biomedical waste categories.

Figure 4 shows various methods used for disposing sharps and needles. 73% participants used needle cutter method. 5% participants used methods without needle cutter. 22% participants used needle covered with cap method.
Table 1 show that, 97% of the participants have used personal protective measures while handling biomedical waste products and only 3% have not used personal protective measures. Graph 4 shows that, 73% participants use needle cutter, 22% participants use needle covered with cap for disposal and 5% don’t use needle cutter for disposing the sharp. The Pie chart shows that 45% subjects don’t have the knowledge and only 55% subjects have the knowledge of colour coding for biomedical waste showing the great need of sensitisation & serious threat to the public health.

![Knowledge about Colour coding for BIOMEDICAL WASTE](Image)

**Fig 5: Knowledge of colour coding of biomedical waste**

Figure 5 shows that only 55% participants knew about the colour coding of biomedical waste. 45% the total participants did not know the exact colour coding. It shows the need for sensitisation programme for biomedical waste management. According to assessment of biomedical waste management practices in a tertiary care hospital in Ludhiana, 93% have knowledge about colour coding for biomedical waste (93 participants/ 100 participants) [12].

**CONCLUSION**

The knowledge & practice of biomedical waste management was assessed among the interns & nursing staff of tertiary care hospitals, urban health centre & primary health centre. Entire 100% were aware about Bio-Medical Waste Management. Only 45% has received the training for biomedical waste management. Out of the 100% study population, 72% have the knowledge that regular biomedical waste record is maintained in their hospital and 93% population have the knowledge that proper segregation of biomedical waste products is done at their hospital. Only 60% have the knowledge about the health hazards associated with biomedical waste (HIV, Hepatitis, Needle stick injuries, Blood-borne diseases etc.). 97% have the knowledge about the personal protective measures while handling biomedical waste products. However, only 73% population disposes sharps/needles using needle cutter, 5% disposes without needle cutter and 22% population disposes with needle covered with cap.

Hence from the above data, it is evident that if the interns or nursing staff were to be duly trained for biomedical waste management and disposal through regular training sessions or by picturesque methods then, there would be significant drop in the amount of health hazards associated with biomedical waste products. The present study shows that there is good knowledge about the biomedical waste management and its disposal but need for sensitisation & repeated training for biomedical waste management since in spite of knowledge they lag behind in the practice.

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