

A study of the impact of three day training programme on knowledge regarding bio-medical waste among paramedical staff of District hospital Etawah (UP)

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Abstract:

Introduction: Biomedical waste by definition means "Any waste which is generated during the process of diagnosis, treatment or immunization of human or animal or in research activities pertaining there to in the production or testing of biological"

Objectives:

- The level of awareness about various aspect of Bio Medical Waste management among the paramedical staff.
- To study the impact of three day training programme on knowledge of Bio Medical Waste management.

Material & Methods: The present study is a Cross sectional Study carried out to assess the impact of three day training programme on knowledge of Paramedical staff posted at District Hospital, Etawah. The change in knowledge was assessed using pre- test and post- test questionnaire.

Result: A total of 72 paramedical staff participated in the study. Majority of the participants were unaware about the hazards associated with the improper handling of Biomedical wastes. The knowledge about the different color codes used for the segregation of biomedical waste was also very low. Similarly, the awareness about the vehicle used for the transportation of biomedical waste was also poor.

Conclusion: The present study concludes that there is an urgent need for regular training for paramedical staff posted at District Hospital and other government hospital located in small District & town as awareness about the Biomedical waste among them is very low.

Key words: Biomedical waste, Paramedical staff, Awareness about Waste Management.

Introduction:

According to the Biomedical waste rule, 1998, Biomedical waste by definition means "Any waste which is generated during the process of diagnosis, treatment or immunization of human or animal or in research activities pertaining there to in the production or testing of biological¹." Thus these waste can be generated at various places like Hospitals, both wards or Out Patients Departments, pathological & biochemical Labs, Radiological labs as well as Research Centre. These centers are also the places where other Non Biological wastes are also generated in abundance &

due to the improper Biological waste management practice majority of the time these waste get mingled with the non biological waste and thus the whole lot gets converted into hazardous waste². This not only increases the risk of getting contracted with hazardous waste many folds but it also increases the cost of management of these waste thus increasing the financial constraints on the health institution. Majority of the studies carried out in India has highlighted that the major cause of the mismanagement is improper segregation practices of Bio Medical waste at the site of generation itself. This segregation practices at the

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site of generation is due to improper training of the health staff involved in the waste management³⁻⁷.

District Hospitals are one of the biggest health institutions in a district where medical colleges are not available. They are one of the most important places where majority of the Bio Medical Wastes are generated in a district and thus proper waste management at the district is thus has a prime importance.

Proper training and awareness about the various aspect of Biomedical waste management among the paramedical staff is thus imperative to fulfill the above objectives. With is this background the above study was carried out as a part of three day training programme intended for increasing the awareness about Bio Medical Waste management and handling among paramedical staff of District Hospital, Etawah. The present study aims to find out :

The level of awareness about various aspect of Bio Medical Waste management among the paramedical staff.

To study the impact of three day training programme on knowledge of Bio Medical Waste management.

Material & Method:

The present study is a Cross Sectional study carried out as a part of three day training programme intended to improve the knowledge and attitude of Paramedical Staff posted at the District Hospital Etawah which is also the Urban Health Training Centre of Department of Community Medicine UP Rural Institute of Medical Sciences & Research, Saifai, Etawah.

A list of all the Paramedical staff posted at District Hospital and allied Hospital was obtained from the office of Chief Medical Superintendent, Etawah. The list was sorted and all the staffs were grouped into two batches each comprising of staff of similar cadre.

Each batch was given training on the different aspect of Biomedical waste management by the staff & postgraduate student of Department of Community Medicine, UP RIMS&R, Saifai, for three consecutive days. Thus two training sessions were organized on two different days for both the batches.

All the participants were given a pre-tested proforma to be filled by them before the start of the training programme and the same set of profroma was also given to them after the completion of the training programme. Thus the first one was taken as pretest proforma and the latter was taken as the post test proforma.

The proforma was divided into two parts. The first part gather information on the socio demographic profile of the participants while the other part gather information about the knowledge on the different aspect of Bio medical waste generation, segregation , initial treatment and terminal disposal. The proforma also gathered information on the hazards related to the indiscriminate disposal of Bio Medical waste.

All the information gathered were transferred into suitable statistical software and proportion and Mc Nemars chisquare test were applied for the analysis and interpretation of the result.

Result:

A list of 79 paramedical staff of different cadre posted at District Hospital and allied hospital was obtained from the office of Chief Medical Superintendent, District Hospital, Etawah. All the participants were grouped into two batches each comprising of 40 & 39 participants. However, of the 79 participants, only 72 participated in the training programme. Seven participants could not participate due to some personal reasons. Thus the total sample was limited to 72 participants only.

Of the 72 participants, 42 were female and 30 were male. Most of the participants were staff nurse (39) followed by pharmacist (18), lab technicians (12) and others (3). Most of the participants were post graduate (45) followed by graduates (21) while six participants were having qualification less than graduation. The mean age of the participants was 43.23(\pm 10.63) years and the mean duration of service was 17.75(\pm 11.64) years. It was noted in the present study that majority of the study participants were unaware about the hazards associated with the poor management and handling of Biomedical waste. Similarly the awareness regarding the measures for the prevention from theses hazards was also very. Majority of the participants were unaware about the guidelines required for the transportation of these Bio medical waste .(Table I)

On in-depth analysis of questions related to the assessment of knowledge regarding segregation, color coding and terminal disposal, it was noted that the awareness on these issue was very low. Majority of the participants were unaware about the various color coding used in Biomedical waste management. Similarly the awareness about the proper segregation of Biomedical waste was also very low among the paramedical staff. (Table II).

Tables I: Showing the distribution of Participants on the basis of General knowledge regarding Bio Medical waste Management.

S. No	Question	Correct response	Incorrect response	Change in response from incorrect to correct response	Change in response from correct to incorrect response	Mc Nemars chi square value and p value
1	Hazards associate with poor waste management	34	4	30	2	$\chi^2=19.82$ $p<0.000$
2	Prevention of hazard associated with poor management & handling of Biomedical waste	30	9	27	8	$\chi^2=10.314$ $p= 0.013$
3	Proper segregation reduces the cost of biomedical waste management	18	7	38	9	$\chi^2=17.89$ $p<0.000$
4	Vehicle designated for the transportation of biomedical waste cannot be used for other purposes	26	14	28	4	$\chi^2=16.67$ $p<0.000$
5	10-25% of the total waste generated in a hospital is a hazardous waste	24	8	28	13	$\chi^2=6.40$ $p<0.01$

Table II: Showing the distribution of Participants on the basis of Specific knowledge regarding Bio Medical waste Management

S. No	Question	Correct response	Incorrect response	Change in response from incorrect to correct response	Change in response from correct to incorrect response	Mc Nemars chi square value and p value
1	Different color code used in Biomedical waste management	12	6	48	6	$\chi^2=32.66$ $p<0.000$
2	Correct combination of bags used for the segregation of Biomedical waste	20	8	48	8	$\chi^2=37.33$ $p<0.000$
3	Open unused sharp are considered as Biomedical waste	10	22	24	16	$\chi^2=1.600$ $p=0.205$
4	Any item which has or had a contact with blood or any body fluid can be considered as Biomedical waste	40	2	26	4	$\chi^2=20.57$ $p<0.000$
5	Untreated Biomedical waste can be stored upto a maximum of 48hrs	28	9	34	1	$\chi^2=31.11$ $p<0.000$

Discussion:

It was noted in the present study that the knowledge about the different aspect of Biomedical waste management is very low among the among the paramedical staff posted at various government hospitals like District Hospital especially in the hospitals located in small district and town far away from the state capitals and metropolitan cities. All effort to upgrade the knowledge of paramedical staff has been centered in the metropolitan districts and state capitals. Awareness about the various aspect of biomedical waste management among paramedical staffs posted in small districts and town is also necessary as they are equally at risk for the hazards associated with the improper management of Biomedical waste. Also, that these centres generate lot of Biomedical wastes which are not treated & disposed properly.

On in depth analysis of questions related to the assessment of knowledge about the general aspect of Biomedical waste management, it was noted that majority of the participants were unaware about the various hazards associated with improper management of Biomedical waste. This is against to the finding of our previous study carried out in Gwalior City which is a metropolitan city in Madhya Pradesh publish in a per review journal³. However these finding are similar to the finding of Nema A et al⁸, Nandwani S⁹ & Boss UJ et al¹⁰ carried out in similar cities & town. Similarly, the awareness about the methods for the prevention of hazards associated poor management & handling of Biomedical waste was also very low.

Majority of the study participants were unaware about the fact that proper segregation of Biomedical waste at the site of generation reduces the cost of waste management. It also reduces the risk of exposure to hazards associated with improper management of Biomedical waste. Awareness about the proper segregation practices especially among paramedical staff is imperative as they are the main personnel responsible for the segregation. Studies carried out by Rangrez RA et al¹¹ & Rudraswamy S et al¹² has also stated that proper segregation of Biomedical waste at the site of generation is of paramount importance & it also reduces the cost of Biomedical waste management.

In continuation of the above fact it was also noted that knowledge about the vehicle earmarked for the transportation of Biomedical Waste was also very low. Majority of the participants were unaware that the vehicle

used for the transportation of the Biomedical waste should not be used for other purposes and that after the transportation of Biomedical Waste they should be kept under lock in a separate place. The participants were also unaware that these vehicles should be having a Bio Hazard sign along with the name and address of waste carrier. Other researchers have made similar observations in their studies^{2-4,6}.

It was noted in the present study that majority of the staffs were unaware that only 10-25% of the total waste generated in a hospital is considered as hazardous waster while rest are non hazardous waste. Awareness of this fact is essential for the proper Biomedical waste management as mixing of hazardous waste with non hazardous waste will convert the whole waste into hazardous waste. Studies carried out by Pandit NA⁷ and Nandani S⁹ has also noted similar findings.

On question by section analysis of the section intended to assess the indepth knowledge of Biomedical waste management, it was noted that majority of the study participants were unaware about the correct combination and segregation of different color coding used in biomedical waste management. It was noted that only 39% of the study participants were aware of different color coding used in Biomedical waste management. Similarly, only 25% of the study participants were aware about correct combination of bags used for the segregation of Biomedical waste. Studies carried out by different researchers like Nema A⁸, Kulkarni MV¹³ and Narang RS et al¹⁴ has also noted similar findings in their studies.

Majority of the study participants were unaware that any item which had a contact with blood or any body fluid should be considered as Biomedical waste. Similarly only 40% of the participants were aware that an untreated Biomedical waste can be stored for a maximum period of 48 hrs. Government of India has led down strict guidelines for proper classification and storage of Biomedical wastes and knowledge of these guidelines among paramedical staff is essential as they are the key member in the waste disposal process. Studies carried out by Basu M et al¹⁵ in Kolkata had noted that majority of the participants were unaware of the Biomedical waste Management law, 1999 and its subsequent amendments.

Conclusion:

The present study hereby concludes that the awareness about the different aspect of Biomedical waste management among paramedical staff posted at different

government hospitals located in small district and town is very low. Regular training programme targeting these paramedical staff should be carried out on regular basis followed by periodic evaluation if government wants to take any serious measures in dealing with the problem of Biomedical waste management.

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