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EFFECT OF EDUCATIONAL INTERVENTION ON POSTGRADUATES REGARDING BIO-MEDICAL WASTE MANAGEMENT (BMW) AT A TERTIARY CARE TEACHING HOSPITAL, BHOPAL

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ABSTRACT

Introduction: The waste produced in the course of health care activities carries a higher potential for infection and injury than any other type of waste.

Objectives: To assess the existing level of knowledge and evaluate the effectiveness of educational intervention and also find out association between pre test and post test knowledge score.

Methods: An interventional trail was conducted using video lecture and slide show as a tool. Pre and post questionnaire for evaluation was used with scoring. The study was conduct in a tertiary care hospital attached to the medical college, in Bhopal. All 1st year PG students were included in study from different departments. Total 30 PG students were included from all departments. Study was conducted in phase manner with objective of imparting knowledge regarding waste management practices.

Results: There was significant increase in knowledge about biomedical waste management before and after educational intervention which was statistically highly significant ($p<0.0001$) except symbol of biohazard

Conclusion: The knowledge of the 1st year PG medical student regarding BMW management varied and was not found to be satisfactory. The intervention proved to improve their knowledge to significant level. Training of UG & PG students should be specially emphasized.

KEYWORDS: Assessment, Biomedical waste management (BMW), knowledge, intervention, PG students.

INTRODUCTION

Healthcare wastes include all types of wastes generated by healthcare establishments, research facilities, and laboratories.[1, 2] The waste produced in the course of health care activities carries a higher potential for infection and injury than any other type of waste.[3] In 2002, the results of a WHO assessment conducted in 22 developing countries showed that the proportion of healthcare facilities that do not use proper waste disposal methods ranges from 18% to 64%.[4] If this waste is categorized as infectious waste per se then it will increase the quantum of waste leading to increase in both financial as well as labour cost. Hence it is imperative to segregate the waste at the site of generation or at the location

of their use.[5] According to WHO reports, 85% of hospital wastes are actually non-hazardous, whereas 10% are infectious and 5% are non-infectious.[6] The waste generation rate ranges between 0.5 and 2.0 kg /bed/ day. It is estimated that annually about 0.33 million tons of wastes are generated in India.[7] A number of studies have indicated that the inappropriate handling and disposal of hospital waste poses health risks to health workers who may be directly exposed to them and to people near the health facilities is associated with a higher risk of diseases such as hepatitis and HIV/AIDS.[8-11] Keeping in view the above scenario, the present study has been undertaken to assess the existing level of knowledge of PG students regarding Biomedical Waste Management and to find out association between pre test and post test knowledge score.

MATERIAL AND METHODS

An interventional trail conducted at a tertiary care teaching hospital attached to the medical college, in Bhopal. All 1st year PG students were included in study from different departments. Total 30 PG students were included from all departments. It is assumed that individuals participate in this study will cooperate and will give correct response. After explaining purpose and type of study, verbal consent was obtained from each participant. Study was conducted in phase manner using video demonstration, didactic lecture and slideshow. Pre and post questionnaire for evaluation was used with scoring.

Assessment and pre-test phase

A pretested self administrative questionnaire was given to each student. It contains questions about knowledge regarding Bio-medical waste management and handling. Total 9 questions were asked questions regarding segregation procedures colour coding and waste treatment methods etc. 10 minutes time was given to respond questionnaire. Knowledge was defined as written response to questions regarding each of these. Results and identity were kept confidential.

Interventions and post-test phase

Educational intervention training was conducted for all PG students. A lecture session with power point presentation on various aspects of BMW management, treatment methods, followed by demonstration of colour coded bags, different equipment and importance of segregation practice was conducted. This was followed by interactive session, in which participants query & doubts regarding practical problems in the application of BMW was discussed. After the session the questionnaire was given to them.

Statistical analysis was done by using tools like SPSS 20 or MS. Excel for paired sample T Test, χ^2 (chi-square) test and percentage.

RESULTS

This study indicates that baseline knowledge and awareness regarding Bio- Medical Waste Management among the 1st year PG students in Tertiary Care teaching Hospital, Bhopal was not so good. Overall positive change was found in knowledge and awareness after educational intervention. There was significantly increase in knowledge about bio-medical waste management pre and post educational intervention which was statistically highly significant (p<0.0001)

Table 1: Analysis regarding effectiveness of educational intervention (Paired Samples T-Test)

Test	Mean	N	Std. Deviation	Std. Error Mean	Coefficient of Correlation	t	P
Pre-test	3.93	30	1.388	0.253	0.370	-12.042	0.000*
Post-test	7.27	30	1.311	0.239			

*Highly significant

Table 2: Awareness of 1st year PG students regarding bio-medical waste management and rules (N=30)

Variable	Pre-test		Post-test		p value
	Aware (%)	Unaware (%)	Aware (%)	Unaware (%)	
Bio-medical waste (M&H) rule 1989	16 (53.33)	14 (46.66)	30 (100)	0 (00)	<0.001
Category of waste	11 (36.66)	19 (63.33)	27 (90)	3 (10)	<0.001
Storage of Bio-medical waste	15 (50)	15 (50)	29 (96.00)	1 (3.33)	<0.001
Punctures proof container	14 (46.66)	16 (53.33)	24 (80)	6 (20)	0.007
Color coding system	16 (53.33)	14 (46.66)	26 (86.66)	4 (13.33)	0.004
Symbol of bio-medical waste & biohazard	27 (90)	3 (10)	30 (100)	0 (00)	0.055*
Method of disposal of waste	10 (33.33)	20 (66.66)	21 (70)	9 (30)	0.004
Type of waste required no container	9 (30)	21 (70)	26 (86.66)	4 (13.33)	<0.001
Treatment of Bio-medical waste	9 (30)	21 (70)	23 (76.66)	7 (23.33)	<0.001

* Statistically not significant

The difference between the Pre-test and Post-test scores is highly significant this shows that the educational intervention on Bio-Medical Waste Management is very effective. (Table 1)

There was a significant increase in the knowledge regarding biomedical waste management and rules after educational intervention except, symbol of biomedical waste management and biohazard which didn't improved significantly (table 2).

There was a highly statistical significance increase in the knowledge in all aspects of Bio-Medical waste management after Educational intervention when compared to before educational intervention except symbol of biohazard (schedule III).

DISCUSSION

In our study, only 30% of the participants had knowledge regarding segregation of the hospital waste at the point of generation. 53.3% of the study participants had no knowledge regarding color coding used in the hospital waste management. 53.3% of the study participants had no knowledge regarding biomedical waste management rules. The study done B.S.Mannapur et al[12] at Bagalkot city showed that similar finding of study were found.

The present study revealed that 1st year students had better scores in knowledge test score which was done after training session on the subject. As evident the awareness level got improved after the training which clearly indicates the effectiveness of educational intervention training to study participants. In present study the difference between the Pre and Post test scores is **highly significant** this shows that the educational intervention on Bio-Medical Waste Management is very effective. Similar finding are seen in Shishir Basarkar[13] in his study conduct in Mumbai they reveled statistically significant difference was found among member who received training of bio-medical waste management which is evident from the rise level of knowledge. Similar finding reveled by Manish Patidar et al.[14] they found pre and post test score is highly significant show that the effectiveness of structured teaching program. El sayed et al.[15] was also found similar finding of intervention program.

CONCLUSION

The knowledge of the 1st year PG medical student regarding BMW management varied and was not found to be satisfactory. The intervention used to increase the knowledge of PG students regarding safe management of bio-medical waste was found highly significant test results.

RECOMMENDATION

There is a need to conduct regular periodic training and retraining at regular intervals among PG, UG students and staff involved at all levels of biomedical waste management right from waste generation to waste disposal.

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