"Effectiveness of structured teaching program on knowledge regarding biomedical waste management among staff nurses"

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ABSTRACT
Background
Biomedical waste is one of the major causes of a wide range of health hazards which should be seriously taken into concern. A wide range of human activities contributes towards biomedical waste management. To reduce the incidence of such illness, the health team members should have adequate knowledge regarding these hazards.

Objectives
•   To evaluate the existing level of knowledge regarding bio-medical waste management among the staff nurses.
•   To assess the effectiveness of structured teaching program by comparing the pre test and post test knowledge score.
•   To determine the association between the post test knowledge score regarding bio-medical waste management with selected demographic variables.

Methods
One group pre-test post-test design was used for the present study. Sample consisted of 50 staff nurses who met the inclusion criteria. Tools used were structured teaching programme to assess the knowledge regarding biomedical waste management.

Results
The findings of the study showed a significant difference between the pre-test knowledge score and post-test knowledge score, which was significant at 0.05 level. Hence, the research hypothesis H1 was accepted.

Interpretation
Further effectiveness of teaching programme was tested by inferential statics using the paired 't' test. A high significant difference (29.504) was found between pre-test and post-test knowledge score. Hence the hypothesis was accepted and structured teaching programme (STP) was effective in increasing the knowledge of subjects regarding biomedical waste management. There was no significant association between the post level of knowledge and the selected demographic variables.

Recommendations
1. A Comparative study can be conducted on health team members.
2. This study can be done in a large sample size for generalization.
3. A follow up study among this population after a year can ascertain the effectiveness of the STP further.

Conclusion
The Structured teaching programme was very effective in increasing the knowledge of subjects regarding biomedical waste management.

Keywords
 STP, knowledge, staff nurses

I.   INTRODUCTION
An ideal hospital requires infection free environment not only to treat the patient but also to keep the visitors safe and surrounding areas infection free hospital generates biomedical waste in both from solid and liquid.[1]

Health-care establishments include hospitals, nursing homes, and medical laboratories generating huge quantity of both hazardous and non-hazardous waste, these wastes are generated as a result of diagnosis, treatment, prevention, and research on human and animal diseases˙ Owing to rapid population growth in India, the demand for health-care has increased significantly. Simultaneously, the numbers of hospitals, small and medium scale nursing homes and clinics have rapidly increased, generating large quantities of infectious

waste. The problem is aggravated due to the marked increase in disposable health-care materials[2]

Biomedical waste may be solid or liquid. Example of infectious waste include discarded blood, sharps, unwanted microbiological cultures and stocks , identifiable body parts others human or animal tissue, used bandages and dressing, discarded gloves, other medical supplies that may have been in contact with blood and body fluids and laboratory waste that exhibits the characteristics described above. Waste sharps include potentially contaminated used needles, scalpels, lancets and other devices capable of penetrating skin.[3]

It is shocking to note that much of the infection waste including needles, syringes, catheters etc. are being recycled only to find its way back into the market. Although health care wastes comprise a very small portion of the entire waste storm hence it deserves special attention because of the hazards. it can ease to human health.[4]

PROBLEM STATEMENT
"A study to evaluate the effectiveness of structured teaching program on knowledge regarding biomedical waste management among staff nurses working in selected hospital in sasaram."

OBJECTIVES
•   To evaluate the existing level of knowledge regarding bio-medical waste management among the staff nurses.
•   To assess the effectiveness of structured teaching program by comparing the pre test and post test knowledge score.
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II. RESEARCH METHODOLOGY
Research design
The researcher adopted pre experimental that is one group pre and post test design in this study.
Setting of the study

The present study was conducted in selected hospital in sasaram, Rohtas, Bihar.
Accessible population
The accessible population of the study was all the staff nurses of selected hospital of sasaram.
Sample
The sample comprised of Staff nurses who are working in selected hospital of sasaram who satisfy the inclusion criteria.
Sample size
50 staff nurses who are working in Hospital of sasaram were recruited for the study.
Sampling technique
Convenient sampling technique is used to select the sample for the present study.
INCLUSION CRITERIA
1. Staff nurses who are willing to participate in the study.
2. Staff nurses who can read and write in English.
3. Available at the time of data collection.
EXCLUSION CRITERIA
1. Staff nurses who are working at managerial level.
2. Those staff nurses who are not registered are not included in the study.
## DATA COLLECTION PROCEDURE
Formal permission to conduct the study was obtained from the concerned authorities. The period of data collection was carried out during 18-3-21 to 24-3-21. Self introduction was done by the investigator to establish rapport with the nursing personnel and gained the confidence. Later the investigator explained the purpose of instruments to the nursing personnel. The study was carried out on 50 staff nurses who fulfilled the inclusive criteria, the sample were selected by using Convenient sampling technique, Pretest was conducted by structured knowledge questionnaire for collecting data. STP was given to the staff nurses, Teaching programme was done and placed in separate spacious demonstration room. After 6 days again post test was conducted, using the same structured questionnaire which was used for pre-test same samples was selected by using their register numbers. The effectiveness of STP was assessed on the basis of their written answer of the knowledge questionnaire.

III. MAJOR FINDINGS OF THE STUDY

Objective 1: To evaluate the existing level of knowledge regarding bio-medical waste management among the staff nurses.
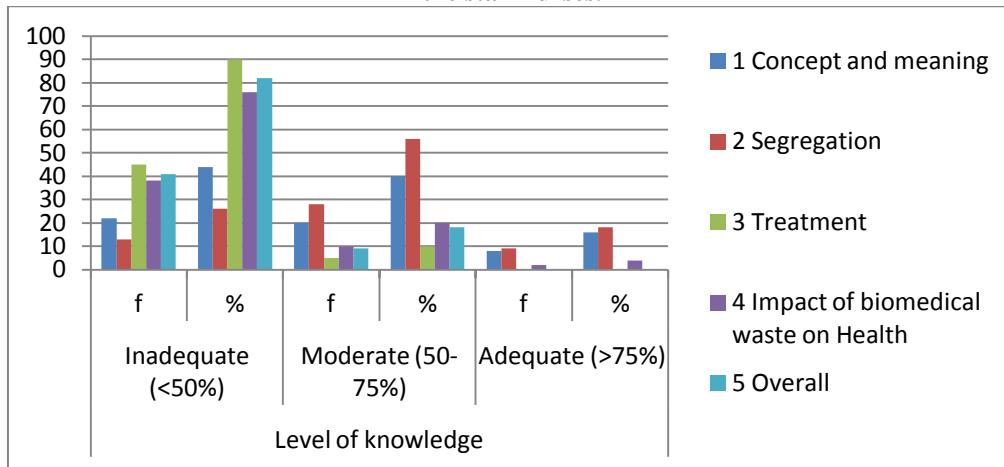
The existing level of knowledge regarding BMWM , 40 % (20) of nurses were having moderately adequate knowledge, 16 % (8) were having adequate knowledge and remaining 44 % (22) of them were having inadequate knowledge. Investigator assessed the level of knowledge on different aspects of biomedical waste management, with respect to concept and meaning, before Structured Teaching Programme mean score was 2.66 with standard deviation of 0.8234, In relation to segregation of BMWM before STP mean score was 3.24 with standard deviation of 1.4786. Regarding treatment, before STP mean score was 2.96 with standard deviation of 1.1945. Regarding Impact of Biomedical waste on health, before STP mean score was 1.94 with standard deviation of 0.9127. Regarding overall knowledge, before Structured Teaching Programme mean score was 10.8 with standard deviation of 2.2315.

Objective 2: To assess the effectiveness of structured teaching program by comparing the pre test and post test knowledge score.
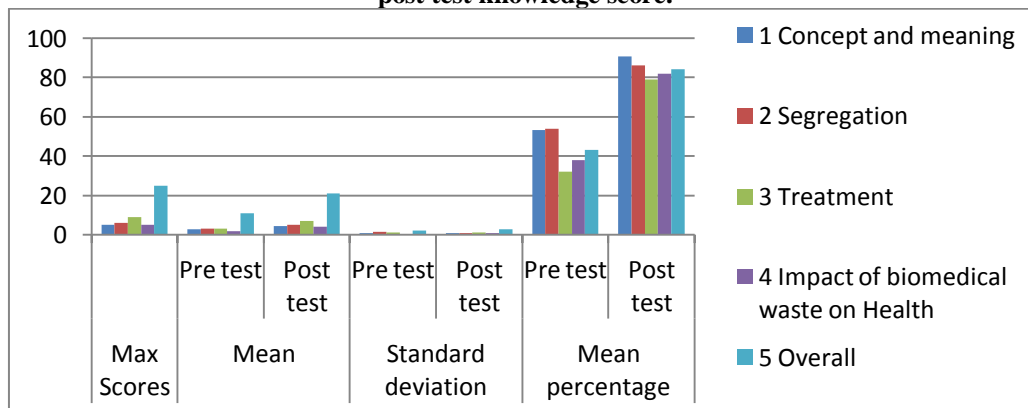
Paired 't' test was used to find out the effectiveness of structured teaching programme on knowledge. The mean difference of concept and meaning was statistically significant (t_{49}= 13.829, p<0.05 The mean difference related to segregation was statistically significant (t_{49}=9.426), p<0.05. The mean difference related to treatment was not statistically significant t_{49}=19.644. The mean difference related to Impact of Biomedical waste on Health was not statistically significant t_{49}=12.025, Overall levels of knowledge, before STP the mean score was 10.8 with standard deviation of 2.2315. After STP the mean score was 21.04 with standard deviation 2.6569. The obtained 't' value 29.504 was highly significant affirming a substantial improvement in the aspect of overall knowledge

among nursing personnel following STP. An average nurses improved their knowledge from 10.8 to 21.04 after STP. The difference between after and before STP knowledge scores is t=29.504, and it was significant overall improvement score of 10.24 is seen in knowledge

Objective 3: To determine the association between the post test knowledge score regarding bio-medical waste management with selected demographic variables.
After STP chi-Square of age was ($X^2 = 2.21$, df=3), gender ($X^2 = 0.113$, df=1), education status ($X^2 = 0.205$, df=2), previous source of knowledge ($X^2 = 0.2381$, df=3), clinical experience ($X^2 = 0.8397$, df=3), type of work area in hospital ($X^2 = 2.529$, df=3) were not significant at 0.05 level so, It indicates that there is not significant association between socio demographic variables and levels of knowledge following STP

IV. DISCUSSION

Manish Jain (2016) conducted a cross-sectional study on "Assessment of the knowledge, attitude and practices regarding Biomedical Waste Management among Paramedical Staff in a Tertiary Level Health Care Facility" Using multistage random sampling, 147 nurses working in various departments in the hospital and 34 lab technicians working in central lab, blood bank, pathology, and microbiology departments were selected for this study. Only 79 (44.88%) knew of biomedical waste legislation and only 57 (32.38%) had correct knowledge of percentage of hazardous waste. Only one-third (54, 30.68%) knew of the categories of biomedical waste and only about half of the respondents (103, 58.52%) knew about disinfection of sharps before disposal. Seventy (39.77%) respondents were in favour of discarding used needles immediately.[5]

Shantanu Tyagi (2016) conducted a Cross-Sectional study on Knowledge, attitude and practices of biomedical waste management among health care personnel in selected primary health care centres in Lucknow among health care personnel working at the Primary Health Centres. A total of 89 health care personnel were interviewed with a pre-designed and pretested semi structured questionnaire. About 35.0% of the staff nurses, 56.2% of paramedical staff and none of the class IV workers had complete knowledge about color coding and segregation of bio medical waste. As compared to other health care personnel, only 18.8% of class IV workers are aware about universal precautions, while 45.4% were concerned about

needle stick injury. None of the class IV workers had ever attended training for BMW management. Proportion of staff nurses, paramedical staff and class IV immunized for Hep B Vaccine was 50%, 21.8% and 9.1% respectively. The study revealed lack of knowledge and awareness about bio-medical waste management amongst primary healthcare workers which results in inadequate handling and management, thereby exposing them as well as the general public to health and environmental hazards.[6]

Vasantha Kalyani (2016) conducted descriptive study to assess the knowledge of Bio-medical waste management among B.Sc. (Hons.) Nursing students of AIIMS, Rishikesh. Total 159 students of B.Sc. (Hons.) Nursing; 51 students of first year, 58 students of second year and 50 students of third year was selected. It was found that the 89% of the students had the average knowledge, 8% had the good knowledge and 4% had the poor knowledge about the bio medical waste management. Study concluded that although most of the students had the knowledge of Bio Medical Waste and its management but regular training reinforcement on bio medical waste management practices is required for the students.[7]

V. CONCLUSION

In the assessment of the level of knowledge pre-test revealed (44%) had inadequate knowledge (40%) had moderately adequate knowledge and (16%) had adequate knowledge, Hence the researcher concludes that the staff nurses had inadequate knowledge in pre-test may be due to lack of awareness about importance of biomedical waste management. Inadequate knowledge in this area may lead to serious consequences in the world health. Even though the health workers become mentally active in their life, attention should be given education for healthy life and prevention of many related problems all over the world, With regard to knowledge, mean post-test score 21.04 with SD 2.6569 was higher than the mean pre-test score 10.8 with SD 2.2315, which showed that the STP was effective in increasing the knowledge. So the research hypothesis H1 was accepted. which was highly significant at 0.001.

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