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BIO MEDICAL WASTE MANAGEMENT- AWARENESS & SKILLS OF REGISTERED NURSES

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ABSTRACT

Biomedical waste means the waste that is generated during diagnosis, of human beings or in research activities pertaining to or in production of bio medicals. This is an exploratory study to assess knowledge and practice of registered nurses regarding biomedical waste management in selected hospital of New Delhi. Objectives of the study are to ascertain relationship between knowledge of registered nurses with their practices regarding biomedical waste management. An exploratory survey approach and non-experimental design was used. The study was conducted on 70 registered nurses by purposive sampling technique in a selected hospital of New Delhi. . The finding suggested that the RNs had adequate knowledge (52.9%) & good practice skills (80%) regarding Biomedical Waste Management.

INTRODUCTION

Biomedical waste means the waste that is generated during the diagnosis, treatment or immunization of human beings that are contaminated with patient's body fluids (such as syringes, needles, ampoules, organs and body parts, placenta, dressings, disposable plastics and microbiological wastes). Proper disposal of paramount importance because of its infectious and hazardous characteristics.

A study on awareness of Biomedical Waste Management among 50 staff nurses was conducted in Sir Sunder La Hospital, which revealed that staff nurses had average knowledge regarding biomedical waste management (50%).Therefore, nurses should be given an opportunity to update their knowledge regarding bio-medical waste management so that the importance of training regarding biomedical waste management needs emphasis; lack of proper and complete knowledge about biomedical waste management impacts practices of appropriate waste disposal. [1]

A similar study was done on 116(58%) female and 84(42%) male participants. Knowledge part of schedule included questions on whether they heard of BMW, categories of BMW, awareness of bio hazard symbol, any health hazard of BMW, disease transmitted by BMW, knowledge about color coding of BMW management bags, received any training for BMWM, and aware about waste management team. The study shows that practice score of BMWM was mostly satisfactory about (78%) but overall assessment about practices related to BMW management suggested that they need good quality training periodically. The study also reported that the improper practice of segregation at the site of origin was observed which caused mixing of infectious and non-infectious waste [2]

A study on awareness and practices about biomedical waste management among healthcare personnel: result of the study says Doctors, nurses, and

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laboratory technicians have better knowledge than sanitary staff regarding biomedical waste management. Knowledge regarding the color coding and waste segregation at source was found to be better (78%) among nurses and laboratory staff as compared to doctors. [The study also reveals that practice score of BMWM was mostly satisfactory in doctors (90%), nursing staff (78%) and lab technician (68%) but overall assessment about practices related to BMW management suggested that they need good quality training periodically. Again the practice score was poor in case of sanitary workers (62%) and reason for this could be that they are having poor knowledge and Practices regarding bio-medical waste management [3]

Medical Waste- Tracking Act of 1988 in U.S, which required the U.S Environment Protection Agency (EPA) to identify alternative approaches to medical waste management. The ministry of environment and forests issued first draft notification on 24th April 1995. The second one followed in October 1997 and ultimately after public and expert scrutiny, biomedical waste management and handling rules were promulgated on 20th July 1986.To protect the environment and community health, the ministry of environment and forests has issued the "Biomedical waste (Management and Handling) Rules 1998/2000" under the environment (protection) Act, 1986.According to the notification all hospitals, clinical, nursing homes, slaughter houses and laboratories should ensure safe and environmentally sound management of waste produced by them. [4]

As per the notification issued for Directorate of Health Services, special vehicles have been procured to monitor the waste management from the hospital under government of NCT of Delhi. All hospitals have already been requested to have separate budget for their hospital waste management.

MATERIALS AND METHODS

The study was conducted in late 2016.The research was conducted as a cross-sectional, exploratory and evaluative study. Non- experimental design was used to assess the .awareness and practice of registered nurses. The data was collected through interviews and observation of 70 registered nurses (RN) working in Indraprastha Apollo Hospital New Delhi RNs were selected by purposive sampling techniques. Tool consists of three sections: Demographic Performa, Knowledge Questionnaire& Practice Check List regarding Bio Medical Waste Management. Items were judged by experts for relevance, clarity and appropriateness; modification was done in the tool as per expert opinion.

The knowledge questionnaire consisted 30structured questions. The questions were self- generated and adapted from literature. The questionnaire covered 1) biological and non-biological waste 2) Types 3) best method for waste disposal. The scoring was done as (>20) Good knowledge, (15-20) Average knowledge, (<15) Poor knowledge. The practice checklist consisted 8 questions. The scoring was done as (>6) Good practice, (4-6) Average practice, (<4) Poor practice.

RESULTS

The data was analyzed by descriptive statistics. Figure 1-3 depicts the demographic distribution of the RNs. Majority were in age 21-25 years (73%) , done GNM (59%) and had work experience of 1-3 years (45%). Table 1 & 2 reveals the item wise percentage distribution of knowledge score & practice score respectively Figure 4 & 5 shows the mean, median, standard deviation of knowledge and practice score of RNs respectively. Table 3 & 4 shows the frequency and percentage distribution of knowledge & practice score of the registered nurses.

Figure 1. Pie Chart Showing Age distribution of RNs

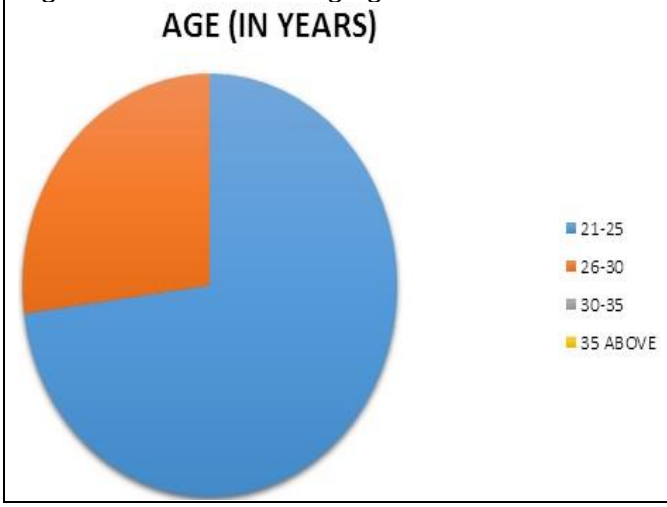

Figure 2. Pie Chart Showing Percentage distribution of Educational status of RNs

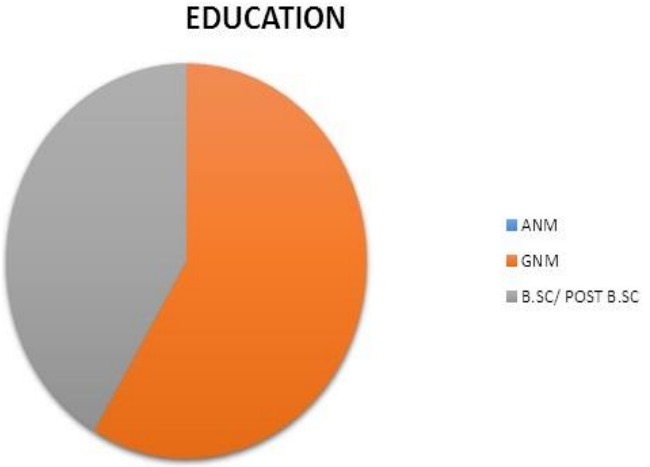

Figure 3. Pie Chart Showing Percentage distribution of Work Experience of RNs.

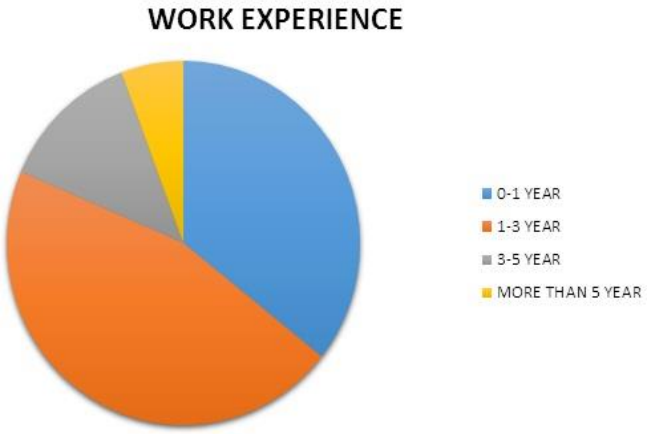

Figure 4. Line Graph showing Mean, Median and Standard Deviation of Knowledge Score

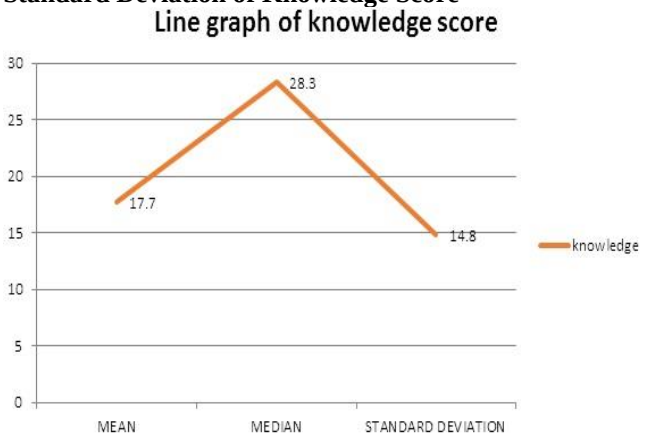

Fig 5. Line Graph Showing Mean median and Standard Deviation of Practice Score

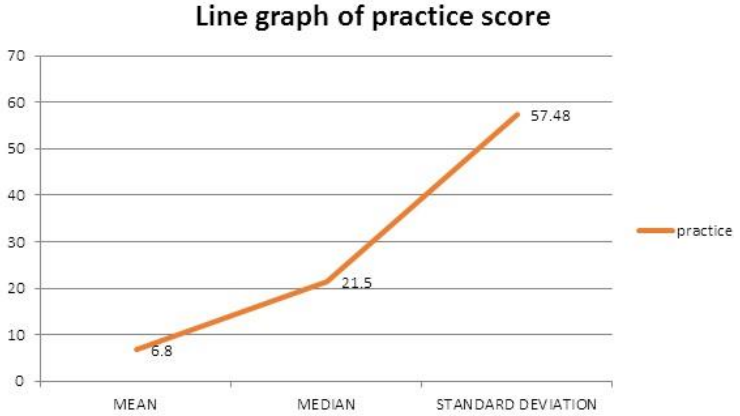

Table 1. Item Wise Percentage Distribution of Knowledge Score of Registered Nurses

S.No	Items	Correct Response	Percentage (%)
1.	Biological waste refers to	62	88.6
2.	Non biological waste refers to	54	77.1
3.	Hospital waste refers to	63	90
4.	While discarding the waste, the most effective personal protective device is	68	97.1
5.	After using needle, it should be	67	95.7
6.	The best method to dispose vomitus is	48	68.5
7.	What is the most essential step in the waste disposal	52	74.2
8.	The best method for disposal of hospital waste is	31	44.2
9.	The knowledge of biomedical waste management is important for	62	88.6
10.	Empty vials, glass materials should be disposed in	59	84.2
11.	All the following should be disposed into yellow bag, except	59	84.2
12.	What is the least preferable waste management option	38	54.2
13.	Problem of solid waste disposal can be reduced through	42	60
14.	Anatomical waste consist of human and animals tissue, organs and body parts which containers should this waste be disposed into	62	88.6

15.	How to dispose general waste	63	90
16.	Which statement describes one type of biomedical waste	45	64.2
17.	Radioactive waste disposed in	25	35.7
18.	How to dispose chemicals waste materials	51	72.8
19.	According to NCR, bio medical waste management Rules came into force in the year	29	41.4
20.	Following are the methods used in waste disposal in hospital except	44	62.8
21.	Incineration means	28	40
22.	Disposing of infected glassware	45	64.2
23.	How to dispose sharp/needles	60	85.7
24.	According to new guidelines of 2016, the bio medical waste management is divided as	12	17.1
25.	What is the symbol of biomedical waste	56	80

Table 2. Item Wise Percentage Distribution of Practice of the Registered Nurses

S.No.	Item	Frequency	Percentage%
1.	Bio medical waste segregation is important	70	100%
2.	Staff should washed hands after disposing the waste	42	60%
3.	Wore gloves while handling the infected waste	38	55.3%
4.	Discarded the following the following articles after single use: (like disposable, syringes, needles, etc.) in puncture proof container	70	100%
5.	Discarded blood and blood materials in yellow bag	49	70%
6.	Discarded the ampoules in the blue bag	70	100%
7.	Discarded the (like IV tubing, used plastics urinary catheters, cannulas, etc.) in the red bag	70	100%
8.	Discarded the (fruit peals, wrappers, papers, etc.) in black bag	70	100%

Table 3. Frequency and Percentage distribution of Practice score of the Registered Nurses

Criteria		Frequency (f)	Percentage (%)
>80% (>20)	Good Knowledge	22	31.4%
60-80% (15-20)	Average	37	52.9%
<60% (<15)	Poor	11	15.7%

Table 4. Frequency and Percentage distribution of Practice score of the Registered Nurses

Criteria		Frequency [F]	Percentage [%]
>80%(6-8)	Good	66	94.3%
60%-80%(4-5)	Average	4	5.7%
<60%(<4)	Poor	0	0%

DISUSSION

The study aimed to assess awareness and practice regarding Bio-Medical Waste Management among registered nurse as well as to identify the areas which were needed to improve in their knowledge and practice to reduce the risk of infections. Majority of registered nurses had average knowledge about Bio-Medical Waste Management. A similar study shows that the staff nurses had (72%) average knowledge regarding biomedical waste management. The importance of training regarding biomedical waste management needs emphasis; lack of proper and complete knowledge about biomedical waste management impacts practices of appropriate waste disposal. The result shows knowledge and practice regarding biomedical waste disposal among nursing staff is satisfactory as compared to other health care workers, Adequate training among health care workers can improve the biomedical waste management and handling practices at hospital settings. Also proper segregation is important for the prevention of infections.

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