Effectiveness of Structured Teaching Programme on Biomedical Waste Management Among Staff Nurses at Selected Hospital, Chengalpet District, Tamilnadu, India

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Abstract-**Introduction: Health care personnel including doctors, nurses and paramedical staffs are the guardians of the community. It is Introduction the duty of the entire health care establishments to ensure speedy recovery of their patients by maintaining clean and infection free surroundings, basic sanitation and cleanliness have always been mandatory requirements in the health care establishment, collection and disposal of Bi-medical waste often ignored are directly responsible for the spread of diseases in the community specifically among health care persons.**

Methodology: one group pretest and posttest design study was conducted among 120 staff nurses at selected hospitals.

Results: In pretest, majority of 80(67%) of staff nurses had adequate knowledge, 16(13%) had highest knowledge and 24(20%) had inadequate knowledge. In posttest, majority of 97(81%) of staff nurses had highest knowledge, 13(10%) had adequate knowledge and 10(8%) had inadequate knowledge.

Conclusion: The present study shows that whereas in the post-test after imparting structured teaching program majority 97 (81%) had adequate practice regarding biomedical waste management.

Keywords: **Biomedical waste, Staff nurse, Infection control, hospital setting.**

INTRODUCTION

Health care personnel including doctors, nurses and paramedical staffs are the guardians of the community .It is the duty of the entire health care establishments to ensure speedy recovery of their patients by maintaining clean and infection free surroundings, basic sanitation and cleanliness have always been mandatory requirements in the health care establishment, collection and disposal of Bi-medical waste often ignored are directly responsible for the spread of diseases in the community specifically among health care personal.

The Bio-medical waste that is originated in hospitals possess numerous potential health and safety hazards. Infectious waste risk the health of not only the hospital staff, patients and their relatives who are visiting and attending them but municipalities. The quantity of bio-medical waste generated will vary depending on the hospital's policies and practices and the type of care being provided. It can be of high risk to the hospital staff the patients the community public health and the environment, where proper disposal norms are often not followed.

Hospital and other health care institutions are one of the essential commodities of daily life. They generate waste day in and day out which may be the potential health hazards to health workers. While hospital claim to dispose of their wastes as per the stipulated norms, it is shocking to note that much of the infectious waste including needles, syringes, catheters, etc. are being recycle only to find its way back into the market. waste requiring special attention includes those that are potentially infectious sharps e.g. needle, scalpels, others subjects capable of puncturing the skin. plastic waste establishment, pharmaceutical waste and a variety of chemically hazardous waste used in laboratories.

According to WHO, 85 percentage of the hospital waste non-hazardous, 10 percentage are non-infectious and the remaining 5 percentage are non-infection but hazardous consisting of chemical, pharmaceutical, radioactive materials. In India 0.5-2 kg per patient per day waste is much higher that is 30-

60 percentages. This is because of improper segregation methods resulting in collection of biomedical waste in a mixed form. Due to propensity of Biomedical waste to transmit pathogens mentioned above and the risk of inviting adverse legal action, it is one of the top cares is exercised while handling and disposing it. Most priorities for a hospital administrator to put in place a framework for it is proper management as well as to keep a close watch over the waste management practice being followed by health care workers (HCWs) and waste handlers.

There are primarily 4 broad functions for biomedical waste management at source of generation, viz placement of waste receptacles or bins lined with waste bags at source of generation, segregation of waste, mutilation of recyclable waste and disinfection of waste. It is highly desirable for a hospital administrator to know the weak points in the chain of waste management so that these could be addressed appropriately. Since beginning, the hospitals are known for the treatment of sick persons, but we are unaware about the adverse effects of the garbage and filth generated by them on human body and environment. Now it is a well-established fact that hospital waste is a potential health hazard to the health care workers, public and flora and fauna of the area.

Disposal of this waste is an environmental concern, as many medical wastes are classified as infectious or biohazard us and could potentially lead to the spread of infectious disease. The most common danger for humans is the infection which also affects other living organisms in the region. Daily exposure to the wastes 3 (landfills) leads to accumulation of harmful substances or microbes in the person's body.

Biomedical waste must be properly managed and disposed of to protect the environment, general public and workers, especially healthcare and sanitation workers who are at risk of exposure to biomedical waste as an occupational hazard. Steps in the management of biomedical waste include generation, accumulation, handling, storage, treatment, transport and disposal. The development and implementation of a national waste management policy can improve biomedical waste management in health facilities in a country.

Biomedical waste may be solid or liquid. Examples of infectious waste include discarded blood, sharps, unwanted microbiological cultures and stocks, identifiable body parts (including those as a result of amputation), other human or animal tissue, used bandages and dressings, 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 (and unused discarded) needles, scalpels, lancets and other devices capable of penetrating skin. Biomedical waste is distinct from normal trash or general waste, and differs from other types of hazardous waste, such as chemical, radioactive, industrial waste.

Medical facilities generate waste hazardous chemicals and radioactive materials. While such wastes are normally not infectious, they require proper disposal. Some wastes are considered multi hazardous, such as tissue samples preserved in formalin. With a judicious planning and management, however, the risk can be considerably reduced. Studies have shown that about three fourth of the total waste generated in health care establishments is non-hazardous and non-toxic. Some estimates put the infectious waste at 15% and other hazardous waste at 5%. Therefore, with a rigorous regimen of segregation at source, the problem can be reduced proportionately. Similarly, with better planning and management, not only the waste generation is reduced, but overall expenditure on waste management can be controlled. Institutional/Organizational set up, training and motivation are given great importance these days. Proper training of health care establishment personnel at all levels coupled with sustained motivation can improve the situation considerably.

Bio-medical waste is any solid and/or liquid waste including its container and any intermediate product, which is generated during the diagnosis, treatment or immunization of human beings or animals or in research pertaining thereto or in the production or testing thereof. The physic-chemical and biological nature of these components, their toxicity and potential hazard are different, necessitating different methods / options for their treatment / disposal. In Schedule I of the Bio-medical Waste (Management and Handling) Rules, 1998 (Annexure II), therefore, the waste originating from different kinds of such establishments, has been categorized into 10 different categories (as mentioned in the box below) and their treatment and disposal options have been indicated.

SUBJECTS AND METHODS

It deals with one group pretest and posttest was used and quantitative research approach was used. setting of study, population, sample and sample size, sampling technique, criteria for the selection of sample, data collection procedure, description of tool for data collection, plan for data analysis, and ethical clearance.

The study used quantitative research approach, and one group pretest and post test design in this study. The participant was selected by purposive sample technique. The sample 120 was selected hospital Chengalpattu district. In this study population was staff nurses. The present study was conducted among staff nurses to assess the practice of biomedical waste management. The samples were selected those who are available at the time of data collection. The consent was obtained from the participant.

In this study include section A – Demographic variables include age, sex, education, experience, and previous, training on biomedical waste management. B- includes one group pretest and posttest design to assess the practice of staff nurses on Biomedical waste management.

Descriptive statistics like frequency, mean, percentage& chi square was used to analyze the data. Assurance was given that the information collected from the participation on this research was used for study purpose only. Written consent was obtained from the study participation before collecting the information. All the data obtained was confidential.

RESULTS

S.NO	DEMOGRAPIC VARIBLE	YEARS	FREQUENCY(n)	PERCENTAGE(%)
1	AGE	20-30 YEARS	54	45
		31-40 YEARS	49	37.5
		41-50 YEARS	17	14.1
2	GENDER	MALE	15	12.5
		FEMALE	105	87.5
3	EDUCATION	GNM	32	26.6
		B.SC NURSING	88	73.3
4	WORKNG EXPERINCESS	1-5YEARS	55	45.8
		6-10YEARS	36	30
		11-15YEARS	29	24.1

TABLE: 1 Frequency and percentage distribution of demographicvariable of staffnurses working in selected hospital. shows that majority of 54(45%) of staff nurses belongs to the age group of 20- 30 years, 105(87) of staff nurses are female, 88(73%) of staff nurses are completed their BSc nursing course and 55(45%) of staff nurses are having 1-5 years' experience.
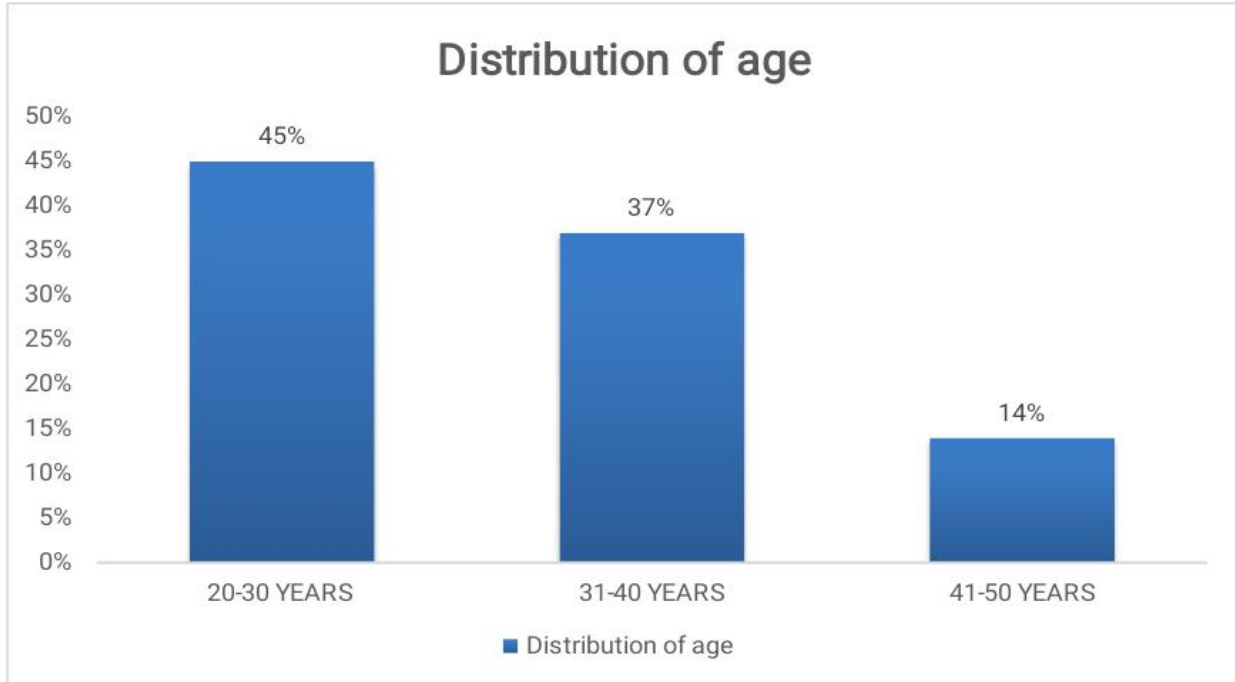
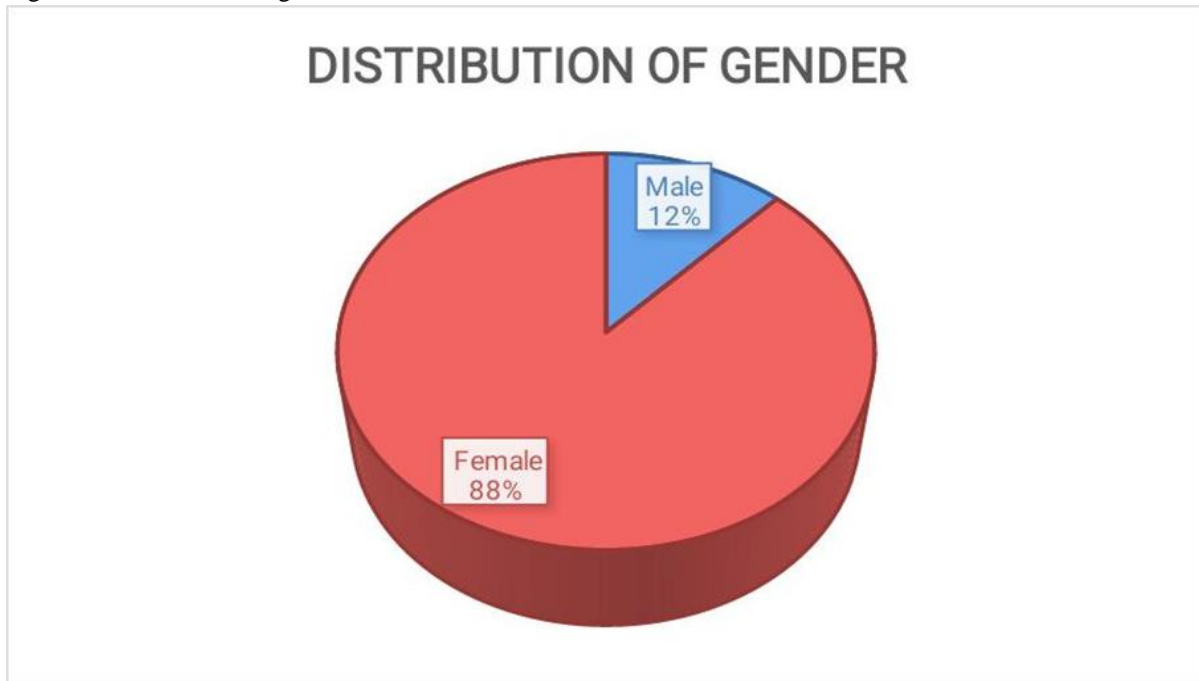Figure 1 Distribution of age of staff nurses

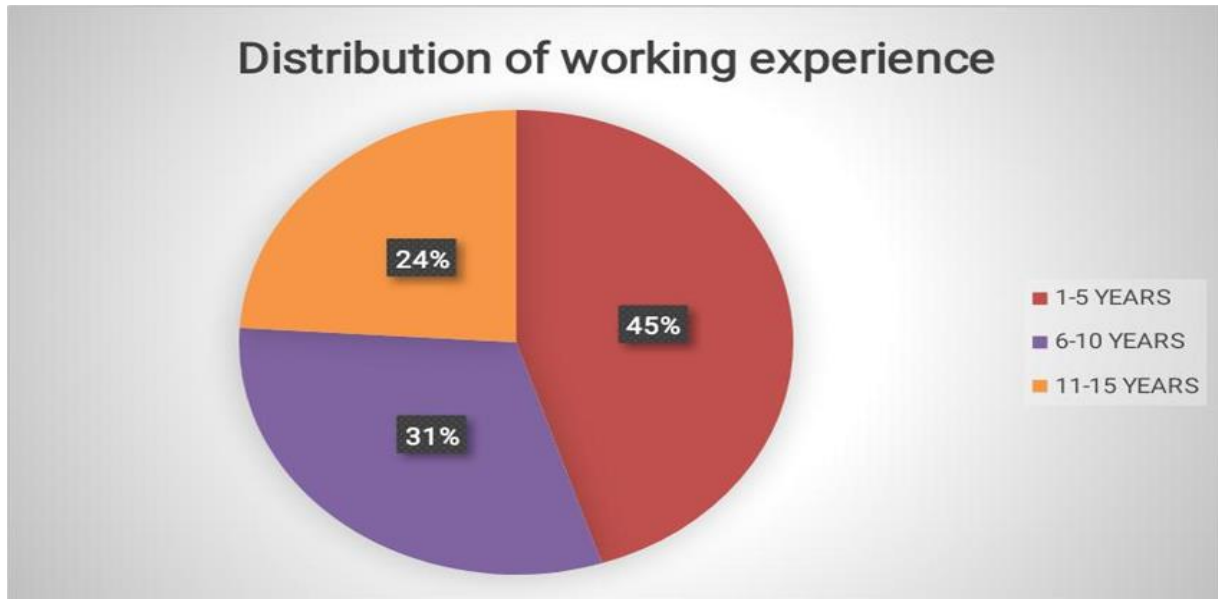Figure 2 Distribution of gender among staff nurses

Distribution of working experience

TABLE 2: Assessment of level of practice pretest and posttest on biomedical waste management.

| S.NO	DEMOGRAPHICVARIABLES	PRE AND POST TEST	FREQUENCY (f)	PERCENTAGE(%)
1.	PRE-TESTPRACTICESCORE	Inadequate	24	20
		Adequate	80	67
		Highest	16	13
2.	POST TESTPRACTICE SCORE	Inadequate	10	8
		Adequate	13	10
		Highest	97	81

In table 2 shows level of practice pretest and posttest on biomedical waste management In pretest, majority of 80(67%) of staff nurses had adequate knowledge, 16(13%) had highest knowledge and 24(20%) had inadequate knowledge. In posttest, majority of 97(81%) of staff nurses had highest knowledge, 13(10%) had adequate knowledge and 10(8%) had inadequate knowledge.

SECTION C - COMPARISON OF PRE AND POST TEST EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME ON BIOMEDICAL WASTE MANAGEMENT AMONG STAFF NURSES

Table 3: Comparison of pre and posttest effectiveness of structured teaching program on biomedical waste management among staff nurse.

S. NO	PRACTICESCORE	MEAN	STANDARD DEVIATION	MEAN DIFFERENCE	PAIRED t TEST
1	PRE-TEST	11.79	3.79	-6.92	t =13.15
2	POST TEST	18.70	4.34		

DISTRIBUTION OF PRE AND POST TEST

■ mean   ■ standard deviation
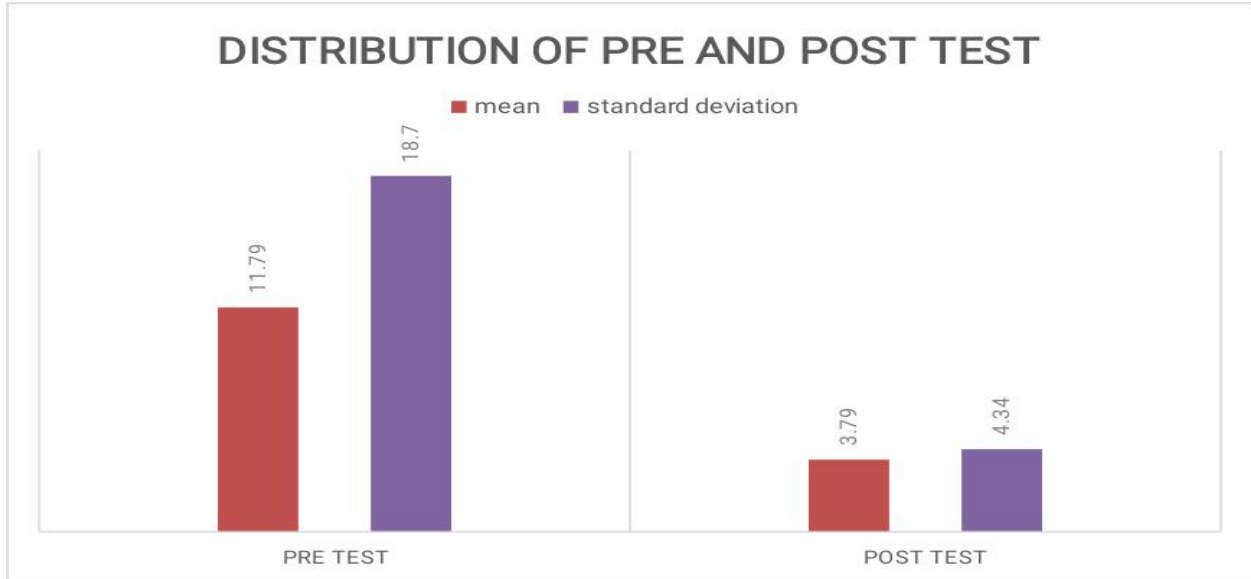
Distribution of pre and post test knowledge score
The P value is less than 0.0001 by conventional criteria, this differenceis considered to be extremely significant.

TABLE 4: ASSOCIATION BETWEEN THE LEVEL OF PRE TEST AND POST TEST PRACTICE SCORE WITH THE SELECTED DEMOGRAPHIC VARIABLES.

Demographic variables	Variables	Inadequate	Adequate	Highest	Chi-squaretest
Age	20-30 years	2	30	2	(X)=13.2
	31-40 years	1	40	10	P=9.488 (NS)
	41-50 years	0	25	10	
Gender	Male	1	14	0	X=7.2
	Female	0	90	15	P=5.911(NS)
Education	GNM	3	30	7	X=9.8
	B.sc Nursing	0	70	10	P=5.911(NS)
Experience	1-5 years	1	15	8	X=6.2
	6-10 years	1	25	13	P=9.488(S)
	11-15 years	0	4	17	

Table 4 shows that the education of staff nurses is significant with the level of practice whereas other demographic variables such as age, gender and workingexperience of staff nurses are non-significant.

DISCUSSION

Regarding percentage distribution of sample according to demographic variables majority with respect of 54(45%) of staff nurses belong to age group of 20-30 years, 105(87%) of staff nurses are female , 88(73%) of staff nurses are completed their BSc nursing course and 55(45%) of staff nurse are having 1-5 years' experience and the majority 45% of staff nurses belong to the age group of 20-30 years whereas 14% of staff nurses were belongs to 41-50 years and majority 88% of staff nurses were female whereas 12% of staff nurses were male among them and that majority 73% of staff nurses were completed their BSc nursing course whereas 27% were completed their diploma nursing and that majority of 45% of staff nurses were having 1-5 years' experience whereas 24% of staff nurses having 11-15 years' experience.

In pretest majority of 80(67%) of staff nurses had adequate practice, 16(13%) had highest practice and 24(20%) had inadequate practice, in posttest , majority of 97(81%) of staff nurses had highest practice and 10(8%) had inadequate practice and were the getting information through the staff nurses.

CONCLUSION

The present study assessed the practice. The results revealed that there was a significant difference in pre-test and post test scores of practices and no

significant association between practice with selected demographic variables. The present study shows that whereas in the post-test after imparting structured teaching program majority 97 (81%) had adequate practice regarding biomedical waste management. This finding shows that the structured teaching program on biomedical waste management among staffnurses.

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REFERENCE

[1] Sukanya Paneer Selvam. Knowledge on Biomedical Waste Management among Nurses Working in Hospital at Madurai. International Journal of Health Sciences and Research.August2016. Vol.6; Issue:8.

[2] Teshiwal Deress et al. Assessment of Knowledge, Attitude, and Practice about Biomedical Waste Management and Associated Factors among the Health care Professionals at Debre Markos Town Healthcare Facilities, Northwest Ethiopia. JEnvironPublicHealth.2018October 2;2018:7672981.

[3] Baisakhi Pariah, et al. Knowledge and Practice Regarding Biomedical Waste in Different Levels of Government Health Care Facilities in West Bengal. R Journal of Dental and Medical Sciences. February2017. Volume16, Issue2Ver.I.

[4] Ku lumina Dash, et al. Assessment of Knowledge, Attitude, and Practices about Biomedical Waste Management among Nursing Professionals in a Tertiary Care Hospital, Bhubaneswar, Odisha. European Journal of Molecular &Clinical Medicine. 2021.Volume 08, Issue 03.

[5] Arjun Sahab, etal. Health Care Waste Management in Public Sector of Tripura, Northeast India: An Observational Study. Indian Journal of Community Medicine. 2019.Volume:44, Issue:4.