

## AWARENESS OF BIOMEDICAL WASTE MANAGEMENT AMONG NURSING PERSONNEL AND AUXILIARY STAFF

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### Abstract

**Background:** In health care sector waste refers different kinds of used and unused materials by different organizations and in particular by the hospital administration. It is in the observation that the waste outcome is used by the hospitals, clinics and different types of diagnostic aids. It is understood that there has to be the process of improving the perception on biomedical waste management by the people responsible in the health care sector. This is the need of the hour concerned with environmental issue.

**Objectives:** It is essential before focusing some light on the biomedical waste management regarding the awareness among the people who are directly concern with the use of biomedical products to how to handle after use waste material in the hospitals and clinics.

**Methods:** One group pre test and post test quasi experimental design was used and lottery method of random sampling technique was adopted. The pretest was conducted using questionnaire. After the pretest structured teaching program was organized and post was conducted.

**Results:** The results showed that in pretest out of 30 samples the pretest knowledge scores in staff nurse (55.6%), auxiliary nurse midwife (54.3%) and ward boys (50.6%) of them had moderately adequate knowledge. In post test staff nurse (84.6%), auxiliary nurse midwife (83.7%) and ward boys (81.33%) of them had adequate knowledge after education.

**Conclusion:** It can be concluded that a well defined structure of inputs on the mode of delivery of information will create a base for the people who are directly concern with the waste management. .

**Key words:** Bio medical waste, Nursing personnel, Awareness, Hospital.

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### INTRODUCTION

Earth is the only planet, which has the congenial environmental conditions for mankind to survive and prosper. Over the centuries the nature has been tampered with the progress of civilization in the name of development. Hence safeguarding the environment is the concern of every individual.

In a true sense biomedical waste is a outcome of after use of various means for testing humans or animals by using a scientific and biological products. Only a small fraction of the total waste generated by health care institutions is actually infectious. Hospital waste management of utmost importance for the safety of laboratory personnel as well as for the community.

Right to live in a clean environment is one of the fundamental rights which has been developed through biomedical waste management and handling rules. These rules regulate disposal of biomedical wastes including human anatomical waste, blood and body fluids, medicines and glass ware, soiled liquid, biotechnology waste and animal waste.

It has been an establish truth in the world of health care that health hazards are outcome of improper management of waste by the hospital administration. The hospital authorities need to follow a serious of process in waste management. From segregation to recycle to degradation and to destruction there is a need for continuous vigilance by the qualified people in the hospitals.

The present study has its focus on knowledge and practice management by hospital staff so that environmental hazards can be avoided through standardized regular teaching practice.

To safeguard the public and health care workers from the risk arising due to biomedical waste, the Bio-medical waste (Management and Handling) Rules, 1998 were notified under section 6, 8 and 25 of the Environment (Protection) Act 1986. These Rules regulate bio-medical waste management at local, regional and national level<sup>4</sup>. Implementation of the biomedical waste management and Handling Rules, every concerned health personnel is expected to have proper knowledge, practice and capacity to guide others for waste collection and management and proper handling techniques.

Skills and precautions in managing hospital waste which reduces the risk of hospital acquired infections will help the nurses to protect their own health and the public health. Hence they should be educated with the latest information and skills in managing hospital waste.

Over the years there has been continuous growth in the volume of waste generation material which may cause various kinds of hazards in the hospitals. This can be taken care by regular clearance of waste material from time to time. Inadequate waste management will cause environment pollution, unpleasant smell, growth and multiplication of insects, rodents and worms and may lead to the transmission of diseases.

### METHODOLOGY

The present study focuses on how to impart the inputs towards efficient management of biomedical waste by the people responsible in the organization. A one group pretest-post test quasi experimental design was adapted for the study, to compare waste management knowledge scores. The study was conducted at Mamata Medical College Hospital, Khammam, Andhra Pradesh. Totally 30 health personnel i.e 10 staff nurse, 10 auxiliary nursing staff and 10 ward boys were selected as study participants by lottery method of simple

random sampling based on the inclusion criteria. Physicians, technicians and other clerical staff in the hospital are considered as exclusive criteria. A formal permission and written consent was obtained from the concerned authorities.

A structured interview questionnaire consisting of Part-A: Demographic Data includes the variables like age, gender, educational status, occupation and experience in the hospital. Part-B: Consists of 30 knowledge questionnaire on biomedical waste management. The items were related to purpose, categories, color coding system, disposal technique for biomedical waste, health hazardous of improper waste management and of personnel and ward boys in biomedical waste management. Each correct response was given one score for 30 as total score, further converted in percentage graded as <50% Inadequate knowledge; 51-74% Moderately Adequate Knowledge and > 75% Adequate knowledge.

The data collected from subjects were completed and analyzed by using descriptive statistics such as number, percentage, mean, standard deviation to describe demographic variables. To assess the knowledge gained between pretest and post test and to test the effectiveness of structured teaching programme, inferential statistics such as paired "t" test and ANOVA were used by SPSS.

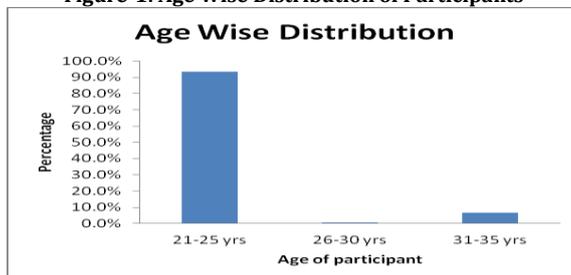
**RESULTS**

Table-1 show the percentage obtained to demographic variables of nursing personnel and ward boys. 28 (93.3%) of them from 21-25 years of age group, 20 (66.7%) were female and 15 (50%) of them had below one year experience. Educational status of sample was 30 (100%) literates. It is essential to know the source of creation of waste materials by the hospitals and how to take proper care by avoiding the risk as well as protecting the environment.

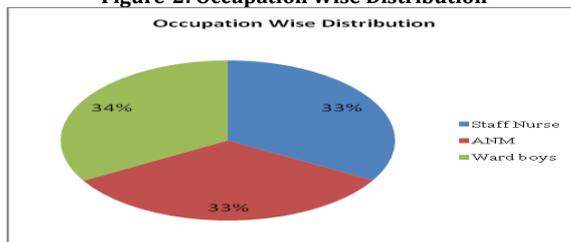
**Table-1: Percentage distribution of demographic variables**

S.No	Variables		Number	Percentage
1	Age	21-25 yrs	28	93.3%
		26-30 yrs	0	0.005
		31-35 yrs	2	6.7%
2	Gender	Male	10	33.3%
		Female	20	66.7%
3	Educational status	Intermediate	10	33.3%
		ANM	10	33.3%
		GNM	10	33.3%
4	Occupation	Staff Nurse	10	33.3%
		ANM	10	33.3%
		Ward boys	10	33.4%
5	Experience in hospital	< 1 yr	15	50%
		< 2 yrs	11	36.7%
		3-4 yrs	4	13.3%

**Figure-1: Age Wise Distribution of Participants**



**Figure-2: Occupation Wise Distribution**



**Table-2: Percentage distribution of pretest knowledge scores**

Level of Knowledge	Staff Nurses	ANM	Ward Boys
	%	%	%
Inadequate (7-14)	10%	30%	30%
Moderately Adequate (15-22)	90%	70%	70%
Adequate (22-30)	0%	0%	0%

Table-2 shows the percentage distribution of the people having sound awareness of pre and post use of medical materials and waste in staff nurse 9 (90%), 7 (70%) in auxiliary nursing staff and ward boys 7 (70%) of them had

moderately adequate knowledge. The stake holders concern with medical and health care practices are of the opinion that outsourcing technique which is very much in use is an option for the disposal of waste materials.

**Table-3: Percentage distribution post test knowledge scores**

Level of Knowledge	Staff Nurses	ANM	Ward Boys
	%	%	%
Inadequate (7-14)	0%	0%	0%
Moderately Adequate (15-22)	0%	20%	10%
Adequate (22-30)	100%	80%	90%

Table-3 shows the percentage distribution of awareness about waste management of hospital authorities and people concern in post test staff nurse 10 (100%), auxiliary nursing staff 8 (80%) and ward boys 9 (90%) of them had an adequate

knowledge. There has been an observation that biomedical waste management is effectively practiced in the private sector but there is missing link in the implementation.

**Table-4: Percentage distribution of comparison of pretest and post test knowledge scores**

Level of Knowledge	Staff Nurses		Auxiliary Nurse Midwife		Ward Boys	
	Pre Test (%)	Post Test (%)	Pre Test (%)	Post Test (%)	Pre Test (%)	Post Test (%)
Inadequate (7-14)	10%	0%	30%	0%	30%	0%
Moderately Adequate (15-22)	90%	0%	70%	20%	70%	10%
Adequate (22-30)	0%	100%	0%	80%	9	90%

Table-4 shows the percentage distribution of comparison of pre test and post test knowledge level of nursing personnel and ward boys about biomedical waste management was 10

(100%) in staff nurse, 8 (80%) in auxiliary nursing staff and 9 (90%) in ward boys of them had an adequate knowledge in post test.

**Table-5: Wilcoxon Signed Rank test**

	Staff Nurse pre-post	Auxiliary Nurse Midwife pre-post	Ward Boys pre-Post	Over all pre-post values
Z	3.726	4.069	3.355	4.099
P-Value	.000	.000	.001	.000

Table-5 shows there is significant difference between knowledge levels of staff nurse, auxiliary nursing staff, ward boys before and after training and also by overall comparison without internal groups. In a private tertiary hospital Delhi, there is a practice of following proper manuals in dealing with the entire process of waste management step by step to reduce infection and contamination.

**DISCUSSION**

In one of its report WHO observed that filing of waste materials will not only cause a threat to the human lives but also will destabilize ecological balance and has a gesture to it it is been suggested to take maximum preventive measures to stop break out of epidemics and contamination.

The post test results showed that staff nurses 100%, auxiliary nursing staff 80% and ward boys 90% of them 90% of the are expected to have complete knowledge of waste management of degradable. There is a significant difference between knowledge level of staff nurses, auxiliary nursing staff and ward boys before and after structured teaching program.

Regular segregation, collection and safe disposal of waste in the hospital to be managed by all the administrative authorities of the hospital. Timely, prompt reporting is highly essential for the administrators in regard to biomedical waste management to the pollution control board.

The observation of the study reveals particularly in the dental field is that biomedical should be handled by dental auxiliary staff for which the dentist are not aware of it. It is further observe there is very little or poor information available to the people either by ignorance or deliberation and lack of strict regulation implementation.

In most of the hospital settings, an ill adapted packaging with the use of plastic bottles and bins for waste collection and overfilled containers. The transfer of biomedical waste to the main storage area was done using trolleys or carts. This was supported by Ndiaye study in Dakar. It is proven truth that almost all the hospitals are very careless towards biomedical waste management which needs the attention of the legislation, implementing realistic management programmes and providing the appropriate on the job training to staff members.

The observation in the current study is that efficiency in the nursing and laboratory staff are good than doctors and unfortunately people working at the sanitary level are very much ignorant about it.

It is also observed in the study that small clinics and hospitals are very negligent towards the outcome of biomedical waste pollution.

Currently the concept of care towards waste management is receiving greater amount of attention due to modification in the regulation. The rules for management and handling of biomedical wastes are summarized, giving the categories of different wastes, suggested storage containers including color coding and treatment options. Let the waste management be not the source of only conceptual frame work but there is need for involvement of appropriate arrangements, use of technology, a good operational plan and fun management for the appropriate training programs.

It is also essential that there should good amount of efforts by the people in the field of health care management to bather biomedical waste left by many private bodies and also there is

a need to bridge the gap at various levels of government towards biomedical waste management .

Inadequate training of personnel, insufficient personnel, insufficient personal protective equipment, and a lack of knowledge regarding the proper use of such equipment shows the need for establishment of standards and periodic monitoring along with effective training of personnel .

The implications of study finding shows the following for future research and clinical practice.

- Strict implementation of guidelines of biomedical waste management in the hospitals.
- The programs on awareness on waste management needs
- more creation of precautions to avoid waste generation.
- Providing the appropriate on the job training to hospital staff members and periodical reinforcement and evaluation.
- Awareness programs must be conducted in nursing colleges to nursing students.

Awareness among health care staff regarding the hazards derived from bio-medical waste and its management is highly essential for the good of the community. Health personnel had average knowledge higher attitude and low level of practices of biomedical waste management. The health care waste management training improves biomedical waste segregation at the hospital, reducing the health care waste volume and costs as an added value.

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