

“A study to evaluate the effectiveness of an orientation programmed on knowledge and practice regarding bmw management among nurses working in selected tertiary level hospitals of agra district, U.P.”

1. Name of Author: Naresh Chand

Ph.D Scholar, Malwanchal University, Indore, M.P.,

India, pin code- 452016.

3. Corresponding Address: Flat No. 09, Shanthi Mangalick Hospital Campus Fatehabad road, Agra, India, Pin code-282004.

ABSTRACT

Waste management is the mainstay of hospital cleanliness, its hygiene and maintenance activities. Biomedical waste is extremely hazardous type of waste which poses serious health hazards. To meet the needs of expanding population, the last century witnessed rapid mushrooming of healthcare establishments in both government and in private sector. The present hospitals generate healthcare wastes in substantial amount. The absence of proper waste management, lack of awareness about the associated health hazards, human resources, insufficient financial and poor control of waste disposal are the main contentious issues connected with health care waste.

Inadequate, inappropriate and improper waste management leads to foul odor, environmental pollution, multiplication of disease carrying organisms like insects, rodents and worms and hence the transmission of diseases like typhoid, cholera, hepatitis A, B, C and AIDS through contact with infected waste and in particular through accidental injuries from used sharps. Owing to unsafe healthcare practices, half a million people all over the world die every year due to infections like hepatitis B, and C, HIV and hepatic cellular carcinoma. Apart from these health risks, inappropriate management of healthcare wastes also has a negative impact on environment by adding toxic pollutants to water, air and soil. This environmental pollution can potentially damage our flora, fauna and the ecosystem. As per WHO statement 85% of hospital wastes are non hazardous while 10-15% is infectious.

INTRODUCTION

In India, the estimated figure of waste generation is 0.5- 2.0 kg/bed/day and out of this, 10 to 15 percent is found to be biomedical waste. India generates the highest amount of BMW in the world and is about 0.33 million tons per year.³

According to rules of biomedical waste (Management and Handling) 1998, it is any type of waste generated during the diagnosis treatment or immunization of human, animals or in research activities. The notification again specifies that the biomedical waste management is an integral part of maintenance of hospital hygiene and activities, so the attitude of health care workers is to be incorporated by good practices.

According to Medical Waste Tracking Act of 1988 medical waste is defined as "any waste that is generated as the result of diagnostic procedures, treatment, or immunization of human beings or veterinary, in research pertaining to, or for the production or testing of biological."⁵

Adequate hospital waste management has become an important worldwide need today the long term effects of poor management is a humanitarian concern for public environment and health workers. So we have to sensitize ourselves and the personnel responsible for this issue in the interest of community.

The purposes of BMW management are prevention of transmission of diseases from patient to patient, patient to health worker and vice versa. Injury to the health workers and workers in support services can also result from improper waste management.

Apart from fear of health hazards the general public is very sensitive by the visual impact of body organs which are recognizable including fetus. It is unacceptable to dispose of these anatomical wastes inappropriately through landfill which is visible to public or approachable to stray animals. It is the moral duty of health care workers for preventing these types of practices.

2. NEED FOR THE STUDY

The present scenario of bio medical waste management in Indian hospitals is grim. It should be mandatory for healthcare establishments to ensure that such type of waste is handled without any adverse effects to human health and environment.¹⁷

There are so many health hazards related to BMW management. The current practices of BMW management in many hospitals are unsatisfactory. The wastes are disposed in an improper manner. Due to improper wastes management process mixing of hospital waste with general waste leading to occupational hazards which leads to transmission of diseases like typhoid cholera, HIV through injuries from sharps like contaminated needles.

A study conducted on knowledge attitude and practices about biomedical waste management among nursing professionals in Srinagar revealed that Knowledge regarding biomedical waste, transmission of diseases was good (70 %). Attitude of the nurses towards

segregation of infections and non-infections waste was positive with 80% in favor of implementation. The practice of low reporting of injuries due to sharps was low possibly due to lack of awareness about formal system of injury reporting. The study recommended regular training and awareness generation activities among nursing staff needs to be held to increase knowledge, attitude and practices.¹⁸

The waste scattered in an around the premises of health care facility invites insects, rodents, flies and other sources leading to spread of communicable diseases like rabies and plague. Improper disposal can also result in recycling of disposable items like syringes, needle, IV sets and other articles without proper sterilization which are coming back to the market. So it becomes the responsibility of the occupiers to manage hospital waste in an eco-friendly manner.¹⁹

The generation of waste ranges from 0.5-2 Kg./bed/day in India and estimated waste generation per year is 0.33 million. The constituents of solid waste were disposable syringes (0.3-0.5%) plastic waste, 7-10% glass materials, 3-5% general waste, 40-45% and infectious waste 30-35%. The shortcomings and hazards associated with management of health care waste is to be identified.²¹

Serious threats to environment and human are posed by indiscriminate disposal of hospital waste which is further compounded by the high prevalence of diseases such as HIV and hepatitis B.²⁰

Hospital acquired infections have been estimated as 10% of all fatal life threatening diseases in South Asian countries which indicates the need for waste management. Hospitals which are supposed to maintain and restore the health of public are threatening their well being. Roper hospital wise disposal can help to prevent hospital acquired infections, the major cause of which is improper biomedical waste management.²²

The system of hospital waste management in health care systems is a burning issue of increasing concern so the administrators has to see new ways of safe cost effective and scientific system of waste management. Above all the personnel responsible for BMW management should be trained for advanced techniques in this area.²³

A study conducted on awareness regarding biomedical waste management among doctors, paramedical staff and non medical staff in a district of MP, revealed that practices of waste management in hospitals were grossly inadequate. The study recommended orientation and re-orientation training programmes for hospital staff and strict implementation of guidelines of BMW management to protect themselves and hospital visitors.²⁴

Study carried out on waste generation in a Govt. Hospital revealed that head nurses, Personnel in hospital wards, and top management did not seem to pay required consideration to BMW

management, which occurred as result of insufficient knowledge and their lack of interest in BMW management. The Hospital did not follow the prescribed color coding system as required by the biomedical waste management rules. Employees haphazardly used bins and bags without any organized segregation or treatment. Waste handlers for the proper disposal of BMW were not effectively trained, which led to inappropriate management and insufficient implementation of the regulation.²⁵

Only a small portion of waste generated in health care facility is harmful, segregation at the point of origin reduces the amount of wastes requiring special attention and minimizes the cost of wastes disposal. So there is a need of personal responsible must be well aware about materials used and its methods of disposal.

OBJECTIVES

- 1 To assess the knowledge of nurses regarding biomedical waste management.
- 2 To observe the practice of nurses regarding biomedical waste management.
- 3 To plan and administer an orientation programmed on knowledge and practice regarding biomedical waste management
4. To evaluate the effectiveness of orientation programmed on level of knowledge regarding biomedical waste management among nurses.

4. HYPOTHESES

H01: There will be statistically no significant difference between pre and post test knowledge scores among nurses regarding biomedical waste management.

H02: There will be statistically no significant difference between pre and post test practice scores among nurses regarding biomedical waste management.

H03: There will be statistically no significant association between pre test knowledge score of nurses with selected demographic variables.

5. ASSUMPTION

. The nurses are having less knowledge regarding BMW Management.

The practice of nurses regarding BMW Management is poor.

Orientation programme will be helpful in enhancing the knowledge and practice of nurses on BMW Management.

6. REVIEW OF LITERATURE

A cross sectional study to assess awareness of bio medical waste management among 116 medical staff, 72 staff from paramedical and 58 from sanitary staff of a teaching hospital, U.P, concluded that awareness of hazards associated with bio medical waste management and handling was 95.83%, prevention of hazards(93.05%), color coding(61.1%), segregation(51.38%), transportation, open unused sharps are not considered as bio medical waste(41.67%), knowledge regarding storage (43.05%), about total waste generated in a hospital is hazardous(25%). The study concluded in service education to nursing staff for improvement in knowledge and practice.

A study on awareness regarding biomedical waste management among doctors, paramedical staff and non medical staff in a district of MP, revealed that practices of waste management in hospitals were grossly inadequate. The study recommended orientation and re-orientation training programmers for health care workers and strict implementation of guidelines in a strict manner of BMW management to protect themselves and hospital visitors.

A KAP study on bio-medical waste management of the staff at a tertiary level hospital and observed that, the laboratory staff was found to have recorded lowest in all the three aspects. The findings showed that they never informed the staff in the form of guidelines or instructions and not supervised their Bio-medical waste management practices. On further processing and analysis it was observed that the laboratory technicians and nursing staff showed least of interest to know more about the system of bio-medical waste management and they expressed that it is the responsibility of hospital management providing direct patient care. The study respondents felt need for training and publicity of the issue.

A cross sectional study focusing on awareness of health workers regarding hospital waste management in health care facilities which was focused on CPCB rules training status, maintenance report and accident reporting system among 71 health care facilities. It was observed that of the 71 health care facilities under study 42.2% of health care facilities were registered with SPCB only 4.2% of health care facilities had trained staff, 39.4% of all health care facilities were maintaining reports related to waste management and none of the facilities had occupational exposure reporting system. The present study revealed gross inadequacies in most of the health care facilities regarding proper waste management system.

A study conducted as management & universal precaution regarding BMW among health care personnel working in a PHC area found that that only 33.3% respondents knew that there is a legislation regarding the management of bio-medical waste. Only 85.71% were aware of the common types of wastes disposed and 82.5% were able to identify color codes of bins for waste disposal. Only 53.9% had proper knowledge regarding all the ten categories of biomedical waste. Correct knowledge regarding Universal Precautions was found among 57.14% health care personnel. Only

39.7% were following safe injection practices and all respondents (100%) were vaccinated for prevention of Hepatitis-B. Awareness of PEP against HIV was among 50.79%. Only 52.3% were having knowledge regarding spillage of body fluids and its management. In a total of 63 health care personnel 33.33% participants underwent training on bio-medical waste management at least once previously, the necessity of training with a periodic follow-up and monitoring was highlighted.

7. METHODOLOGY

A research methodology defines what the activity of researcher is, how to proceed, how to measure progress and what constitute success. Research methods are the steps, procedures and strategies for gathering and analyzing the data in a research investigation. This Chapter deals with the methodology used to administer and evaluate the effectiveness of an orientation programme on knowledge and practice regarding biomedical waste management among Nurses Working in Selected tertiary level tertiary level hospitals of Agra district, U.P.

Chapter includes the brief description of the different steps that were undertaken by the investigator for the study. It is discussed under the following headings : the research approach, research design, population, sample, setting, sampling technique, selection criteria, description of tools, data collection procedures, plan for data analysis and interpretation of the data.

8. ANALYSIS AND INTERPRETATION

Section 1 - Description of socio-demographic characteristics

This section discuss with distribution of the respondents according to socio- demographic characteristics which were described as age in years, gender, educational qualification, area of work, year of experience, type of health care organization and area of residence.

Table-1 Distribution of Respondents According to Age

N=708

Age	N	%
20 - 29 years	219	30.93
30 - 39 years	185	26.13
40 - 49 years	220	31.07
50 years & Above	84	11.86
Total	708	100.00

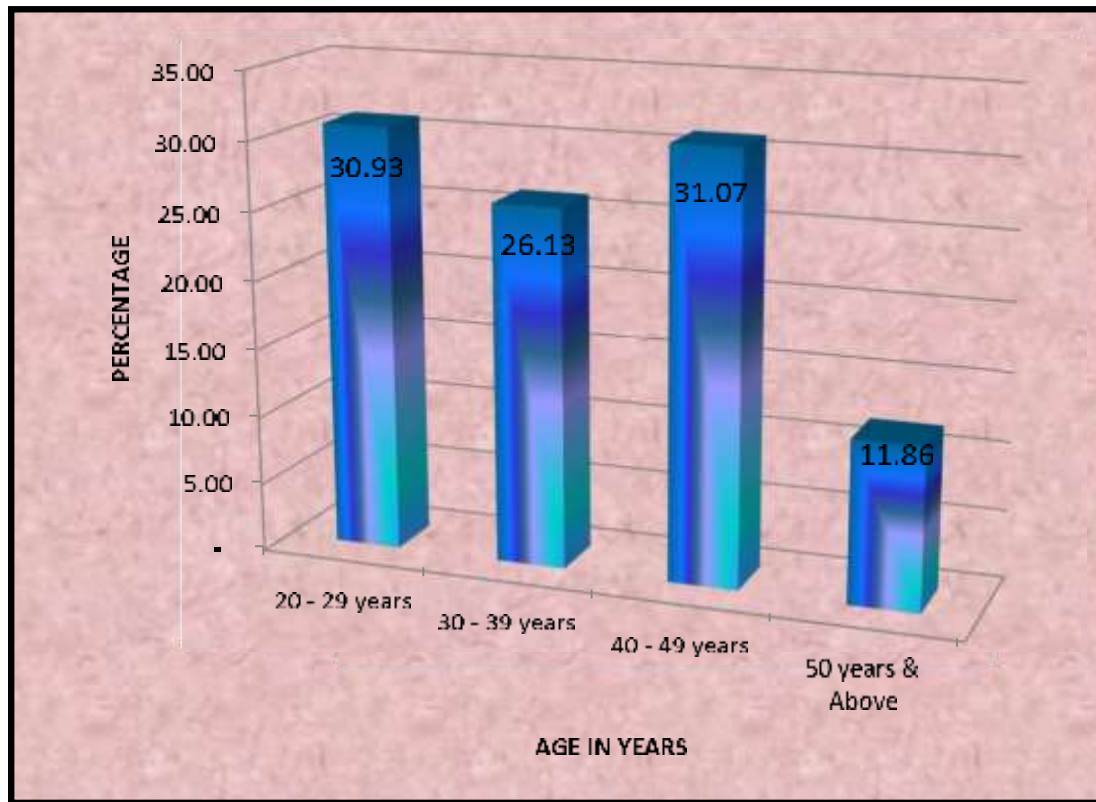


Figure 1. Distribution of Respondents According To Age in Years

Table 2 and Fig.5 depicts that majority (31.07%) of respondents were in the age group of 40-49 years and almost equal percentage (30.93%) were in the age group of 20-29 years. 26.13% were in the age group of 30-39 years and only 11.86% respondents were in the age group of 50 years and above.

Table-2 Gender Wise Distribution of respondents

N=708

Gender	N	%
Male	303	42.80
Female	405	57.20
Total	708	100.00

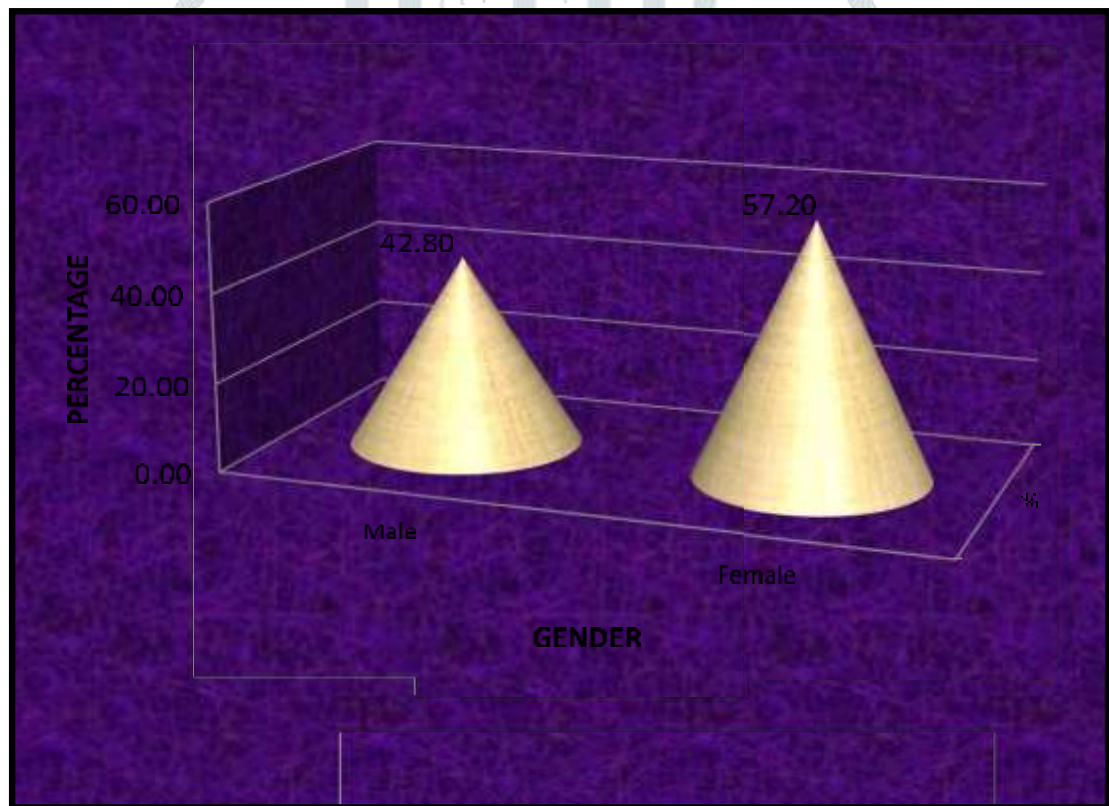
**Figure 2. Gender wise Distribution of Respondents**

Table 3 and Fig-2 depicts that majority 57.20% of respondents were female and 42.80% were male nurses.

Table-3 Distribution of respondents according to Educational Qualification

N=708

Education	N	%
Diploma	357	50.42
Graduation	271	38.28
Post Graduation	80	11.30
Total	708	100.00

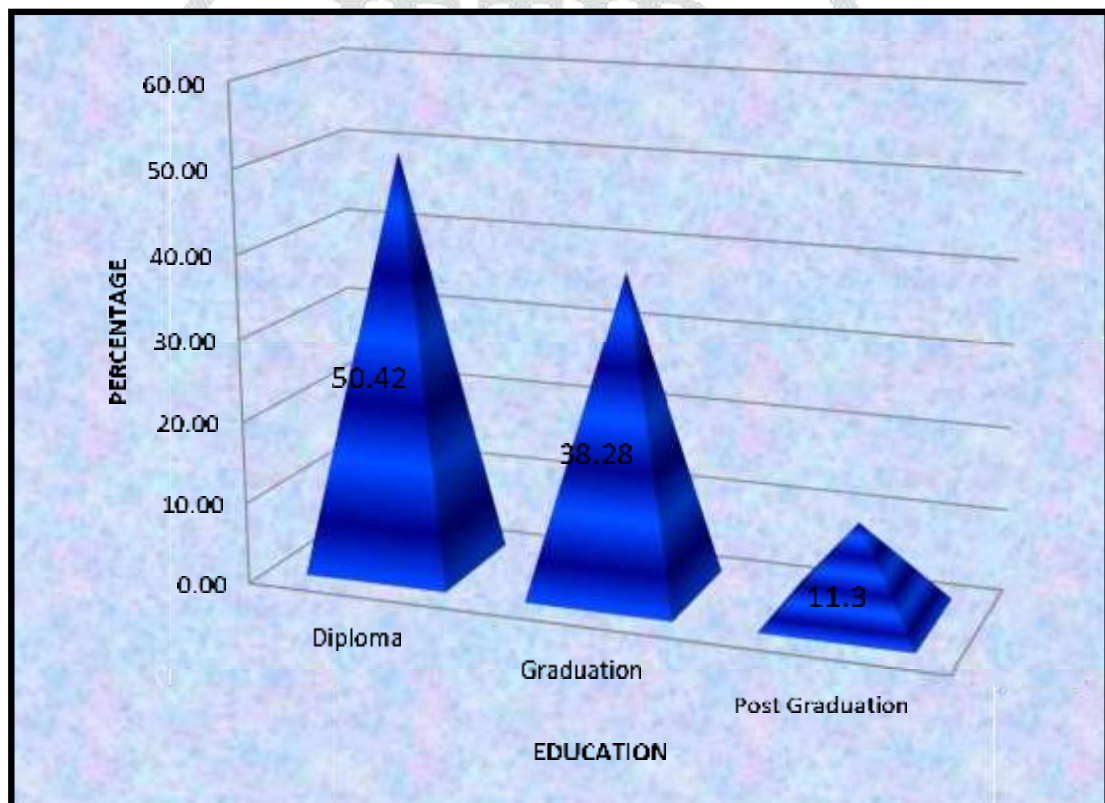
**Figure 3. Distribution of respondents according to Educational Qualification**

Table 3 and Fig-3 depicts that majority 50.42% of participants were diploma holders, 38.28% were graduates and only 11.30% of respondents were post- graduates.

Table-4 Distribution of respondents according to Area of Work

N=708

Area of Work	N	%
Medical	142	20.06
Surgical	92	12.99
Maternity	151	21.33
Operation Theater	149	21.05
Pediatric department	54	7.63
Others	95	13.42
No Response	25	3.53
Total	708	100.00

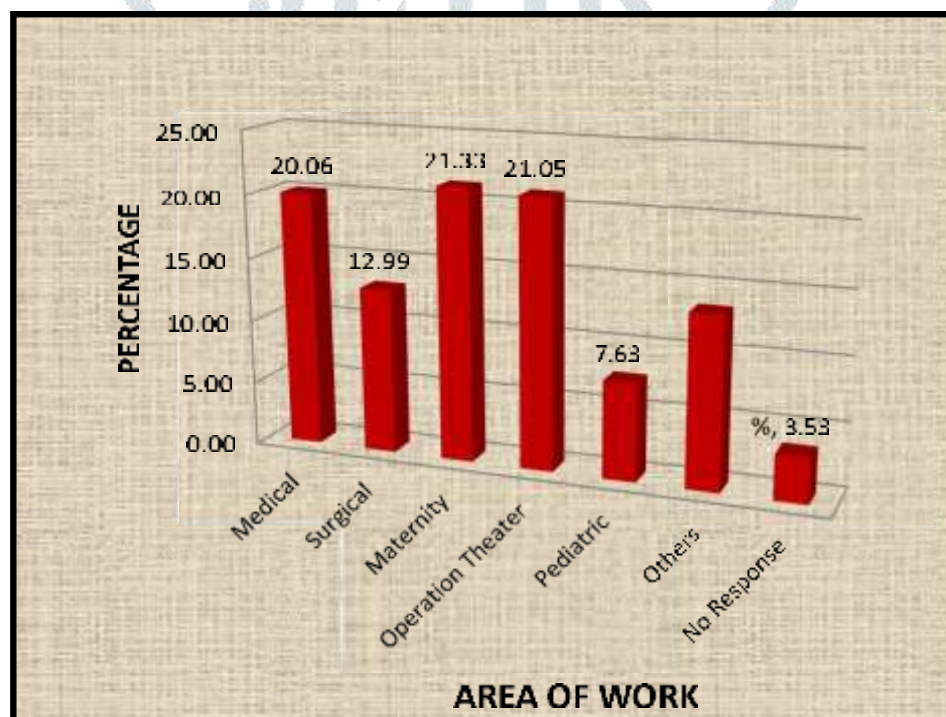
**Figure 4. Distribution of Respondents According To Area of Work**

Table 4 and Fig-4 Depicts that equal percentage 21% of respondents were from maternity dept. and operation theatre 20.06% of participants were from medical wards, 13.42% from other depts. (labs, OPDs, injection room etc.) 12.99% from surgical wards and only 7.63% were from pediatric department and 3.53% of participant were not respondent.

Table-5 Distribution of respondent according to year of Experience

N=708

Year of Experience	N	%
< 1 year	45	6.36
1 - 5 years	118	16.67
5 - 10 years	157	22.18
10 years & Above	388	54.80
Total	708	100.00

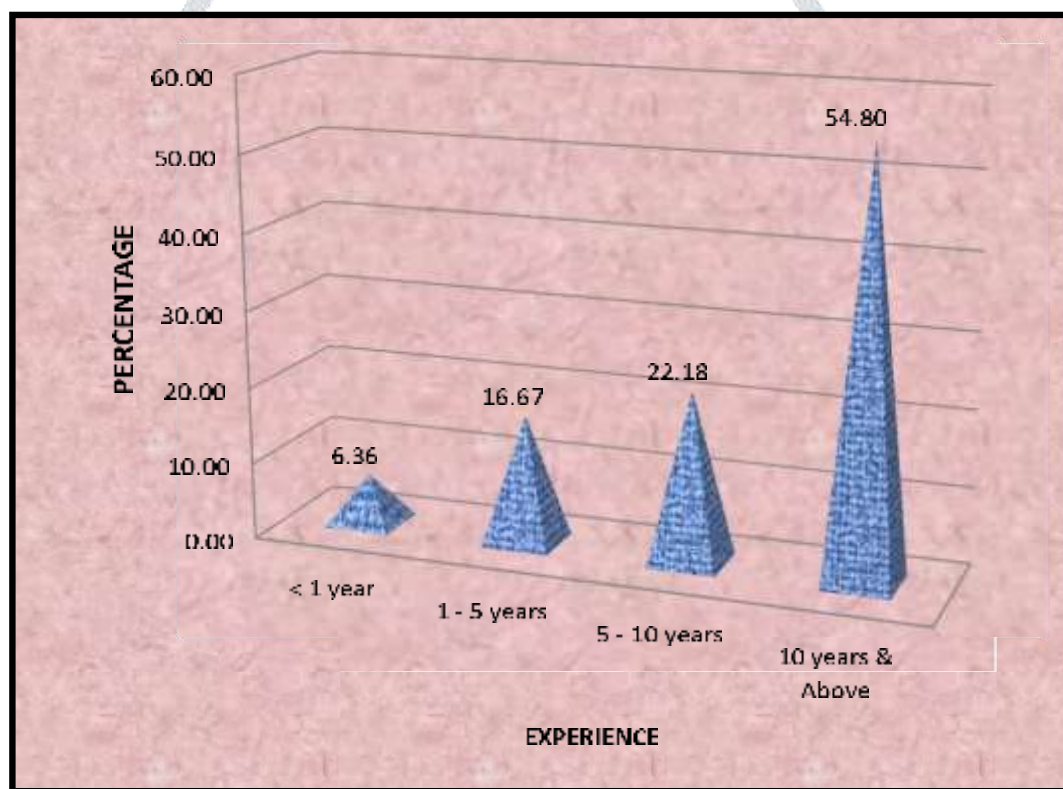
**Figure 5. Distribution of Respondents According To Year of Experience**

Table 5 and Fig-5 depicts that majority 54.80% of respondents were having 10 years and above experience, 22.18% of participants were having 5-10 years, 16.67% were having 1-5 years and 6.36% of respondents were having less than 1 year experience.

Table-6 Distribution according to Type of Health Care Organization

N=708

Type	N	%
Public	491	69.35
Private	217	30.65
Total	708	100.00

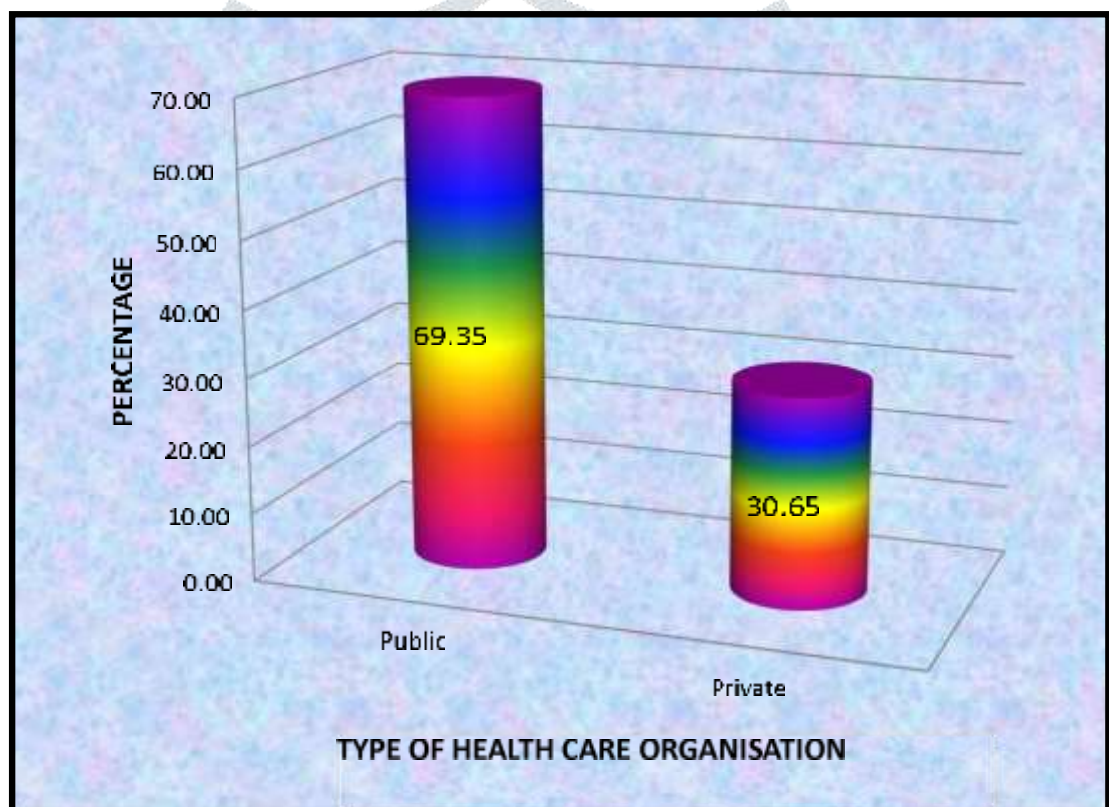
**Figure 6. Distribution of Respondents According To Type of Health Care Organization**

Table 6 and Fig-6 Depicts that majority 69.35% of respondents were from public sector hospitals whereas 30.65% were from private sector hospitals.

Table-7 Distribution of respondents according to Area of Residence

N=708

Area of Residence	N	%
Urban	383	54.10
Rural	325	45.90
Total	708	100.00

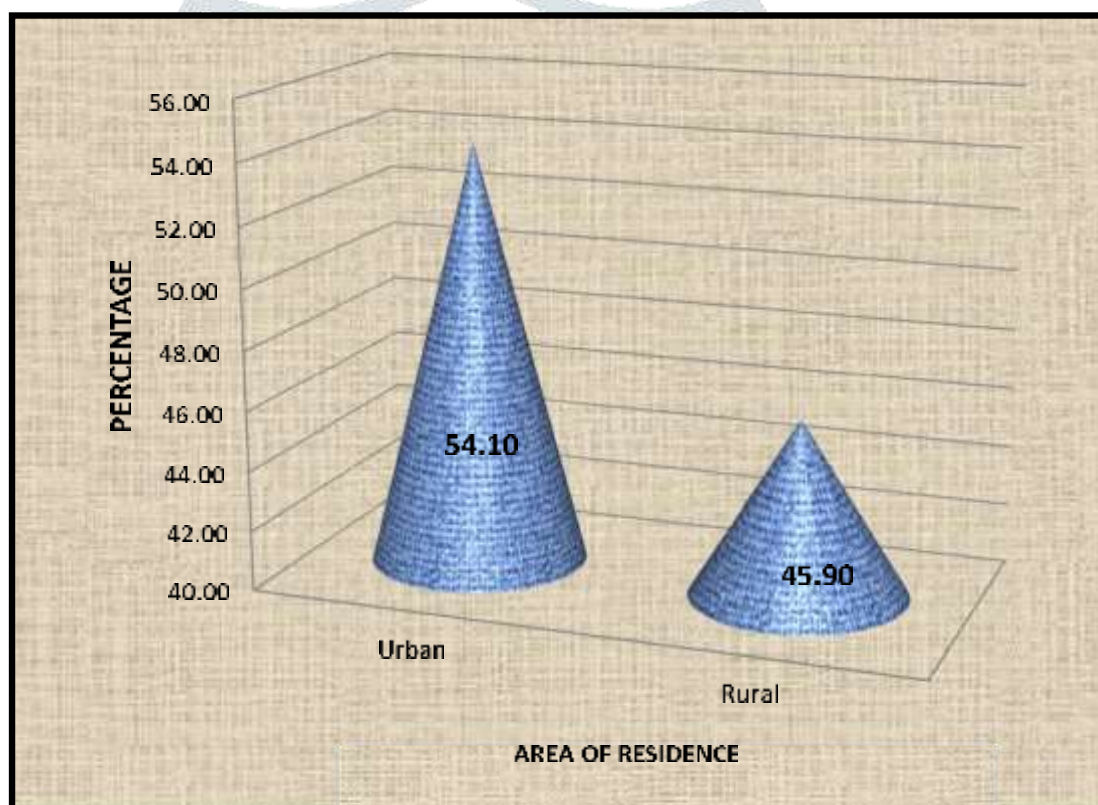
**Figure 7. Distribution of Respondents According To Area of Residence**

Table 7 and Fig 7 depicts that 54.10% of participants belong to urban area whereas 45.90% of participants were residents from rural area.

9. MAJOR FINDINGS OF THE STUDY

Majority (37.4%) of respondents were from the age group of 40-49.

70% respondents were female

77% respondents were diploma/ GNM Staff

Area of work was Pediatric Department, RNT Medical College.

Majority (65.71%) of nurses were having experience of 10 years and above.

All participants were from public sector

62% of participants were from urban background whereas only 8% were from Rural background.

Reliability of section 2 was found 0.764 and section 3 practice items were 0.850, so the tool was found reliable, hence the reliability of the tool was established to conduct main study.

10. CONCLUSION

Demographic characteristics of the sample revealed that majority (31.07%) of respondents were from age group of 40-49 years of age. Higher percentage (57.20%) respondents were females. 50.42% of the participants were diploma holders, higher percentage (29.33%) of participants were from maternity department. Majority of the participants were having experience of >10 years. Highest percentage (69.35%) of nurses was from public sector hospital. Majority of respondents (54.10%) were from urban area. As per the pretest results inadequate knowledge was found in most of the sensitive area like health hazards and disease transmission posed by biomedical waste, collection of biomedical waste, disinfection of biomedical waste, categories of biomedical waste, transportation of waste and disposal/ treatment of biomedical waste. Regarding practice of BMW management poor practice was found in areas like disposal of sharps, reporting of needle stick injuries, use of PPE, practice of proper hand washing etc.

11. RECOMMENDATIONS

Nursing protocols should be framed for every step of BMW management process specifying the role and responsibilities of the health personnel.

Nursing staff should be sensitized for segregation of waste at the point of Origin and minimization of waste.

Use of PPE during patient care and handling BMW should be assured.

Reporting of occupational exposure to the concerned official and get treatment as per protocol of the health care institution.

It should be made mandatory for all nurses to undergo CME, orientation Programmers and workshops for updating knowledge on BMW management.

Protocols related to waste management process should be displayed in all clinical departments where patient care and diagnostic procedures are carried

Out.

Periodic training programmers can be organized for the nursing staff to update the knowledge and practice aspects.

12. REFERENCE

1. Park K. Text book of preventive and social medicine. Hospital waste Management. 21st edition Jabalpur: M/s Banarasidas Bhanot Publishers; 2009. 694-99.
2. Biomedical Waste (Handling and Management) Rules. 1998. The Gazette of India 2000.
3. Joglekar KS. Hospital Waste Management. Ist edition. New Delhi: Vora Medical Publications; 2005. 78 - 81.
4. Amantpreet Singh, Sukjeet Kaur. Biomedical Waste Disposal. Edition 1. Jaypee Brothers Medical Publishers; 2012. 16-17.
5. Retrieved from: www.dpcc.delhigovt.nic.in/faq_autho.htm
6. Ozbeck M Senin FD. A study of the dental solid waste in the school of dentistry Turkey. Journal of waste management, 2010: vol 25:339-345.
7. Rahul Sharma, SK Rasanian. A study of prevalence and response to needle stick injuries among HCW in a tertiary care facility in Delhi, India. IICM, 2010: vol 35(1):74-77.
8. Biomedical Waste (Handling and Management) Rules. 1998. The Gazette of India 2000.
9. Sukjeet Kaur, Amantpreet Singh. Biomedical Waste Disposal. Edition 1. Jaypee Brothers Medical Publishers; 2012. 20-21.

