DISSERATION REPORT

AT

YASHODA SUPERSPECIALITY HOSPITAL AND CANCER INSTITUTE

GAZIABAD

ASSESSING KNOWLEDGE, ATTITUDE, AND PRACTICES OF BIOMEDICAL WASTE MANAGEMENT AMONG STAFF NURSES AT YASHODA HOSPITAL, GAZIABAD

BY

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PG/22/004

UNDER THE GUIDANCE OF

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PGDM (HOSPITAL & HEALTH MANAGEMENT)

(2022-24)

INTERNATIONAL INSTITUTE OF HEALTH MANAGEMENT AND RESEARCH, NEW DELHI

The certificate is awarded to

MR. AJEET KUMAR YADAV

In recognition of having completed her Dissertation in the Operations Department.

And successfully completed his project

ASSESSING KNOWLEDGE, ATTITUDE, AND PRACTICES OF BIOMEDICAL WASTE MANAGEMENT AMONG STAFF NURSES AT YASHODA HOSPITAL, GAZIABAD

1st March 2024 to 30th June 2024

AT

Yashoda Super speciality Hospital and Cancer Institute, Ghaziabad.

Comments:

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MRS. NAGMA KHAN

OPERATION HEAD

YASHODA SUPERSPECIALITY HOSPITAL AND CANCER INTITUTE,

GAZIABAD

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **MR. AJEET KUMAR YADAV** student of PGDM (Hospital and Health Management) from International Institute of Health Management Research; New Delhi has undergone internship at Yashoda Super speciality Hospital and Cancer Institute from 1st March 2024 to 30th June 2024.

The candidate has successfully carried out the study designed to her during dissertation and her approach to the study has been sincere and analytical.

The internship is in fulfilment of the course requirements. We wish her all the success in all her future endeavours.

Dr. Sumesh Kumar   Dr.pankaj talreja Associate Dean,

Academic and Student   Controller of Examination IIHMR, NEW DELHI

IIHMR, NEW DELHI

CERTIFICATE FROM DISSERTATION ADVISIORY COMMITTEE

This is to certify that **Mr. Ajeet Kumar Yadav** a graduate student of PGDM (Hospital and Health Management) has worked under our guidance and supervision. He is submitting this dissertation title "Assessing knowledge attitude and practices of biomedical waste management among staff nurse at Yashoda Hospital "Ghaziabad in partial fulfilment of requirement for the award of the PGDM (hospital and health management). This has requisite standard and to the best of our knowledge no parts of it reproduced from any other dissertation, monograph, report or book.

Institute Mentor: Dr. Pankaj Talreja

Designation: Associate Professor, controller of examinations.

Organisation: IIHMR, Delhi

Org. Mentor: Mrs. Nagma Khan

Designation: Operation Head

Organisation: Yashoda Superspecialty Hospital and Cancer Institute

INTERNATIONAL INSTITUTE OF HEALTH MANAGEMENT RESEARCH

NEW DELHI

CERTIFICATE BY SCHOLAR

This is certify that dissertation titled "**Assessing knowledge attitude and practices of biomedical waste management among staff nurse at Yashoda Hospital** submitted by Mr. Ajeet Kumar Yadav Enrolment No PG/04/22 under Supervision of Mrs. Nagma Khan, Dr. Pankaj Talreja for award of PGDM (Hospital and health management) of the institute carried out during the period from 1st March to 30th June embodies my original work and has not formed the basis of award of any degree, diploma associate ship, fellowship, titles in this or any other Institute or other similar institution of higher learning.

Mr. Ajeet Kumar Yadav

FEEDBACK FORM

Name of student   -: Mr. AJEET KUMAR YADAV

Dissertation organisation   - : Yashoda Superspeciality Hospital and Cancer Institute, GZB

Area of Dissertation   -: Operations Department

Attendance   -: Regular

Objective Achieved   - : Assessing knowledge, attitude, and practices of biomedical

Waste management among staff nurses at Yashoda Hospital

Strengths   -: Hardworking, Problem solving. Self motivated.

Suggestion for improvement -: NA

Suggestion for Institute   -: No

(Course curriculum, industries

Interaction, placement, alumni)

Ms. Nagma Khan

Operation Head   *Nagma.*

Yashoda Superspeciality Hospital and Cancer Institute

ACKNOWLEDGEMENT

The satisfaction and exhilaration that come with the successful completion of the project would be incomplete without mentioning the people who made it possible, so first and foremost I would want to thank The Almighty GOD whose favour makes all things possible.

 I would like to take this opportunity to thank and express my sincere gratitude to my faculty supervisor, Dr. Pankaj Talreja (Associate Professor, Controller of Examination, IIHMR, New Delhi), my hospital guide, Mrs. Nagma Khan, Operations Head, Yashoda Super speciality Hospital & Cancer Institute, Ghaziabad, and to all those without the help of whom I could not have written this unique piece of writing. They gave me invaluable advice and time during the study, made helpful ideas, had a positive attitude and was constantly encouraging, for which I am incredibly grateful.

 I owe the entire hospital personnel my sincere gratitude and appreciation.

Last but not least, I want to express my sincere gratitude to my parents for their love, support, education, belief in me, and for helping me get ready for the future.

Table of content

List of abbreviations

1. **AKAP** – Assessing Knowledge, Attitude, and Practices

2. **BMW M** – Biomedical Waste Management

3. **KAP** – Knowledge, Attitude, and Practices

4. **BW** – Biomedical Waste

5. **HCW** – Healthcare Workers

6. **PPE** – Personal Protective Equipment

7. **ETD** - Electro-Thermal- Deactivation

8. **WHO**- World Health Organisation

9. **BMW** – Biomedical Waste Management

10. **WHM** – Waste Handling and Management

11. **EMW** – Effective Medical Waste

12. **INC** – Infection Control

13. **ICN** – Infection Control Nurse

ABSTRACT

Biomedical waste management (BMW) is a critical aspect of healthcare, essential for protecting the health and safety of patients, healthcare workers, and the environment. Proper handling, segregation, and disposal of BMW are necessary to minimize infection risks, prevent environmental pollution, and comply with legal and regulatory standards. However, many healthcare facilities, including hospitals, face challenges in maintaining efficient BMW management systems.

Staff nurses, as primary caregivers, play a key role in managing biomedical waste, making their knowledge, attitudes, and practices (KAP) central to upholding high standards of BMW management. Their involvement is crucial for ensuring patient safety, safeguarding healthcare professionals, and minimizing environmental risks. The World Health Organization (WHO) emphasizes that improper disposal of healthcare waste can result in needle-stick injuries, exposure to dangerous pathogens, and environmental hazards. With around 16 billion injections administered annually, unsafe disposal practices contribute to the spread of infections like hepatitis B, hepatitis C, and HIV. Moreover, effective BMW disposal reduces environmental contamination from hazardous substances.

This study aimed to assess the KAP of staff nurses at Yashoda Hospital, Ghaziabad, regarding BMW management. It also investigated the relationship between KAP and demographic factors such as age, education, experience, and previous BMW training. By identifying gaps in knowledge and practices, the study sought to inform the development of interventions and training programs to enhance BMW management at the hospital.

The findings of this research will deepen understanding of BMW management in healthcare settings and offer practical recommendations for creating targeted training initiatives and

policy interventions. These improvements are expected to enhance compliance, safety, and the overall effectiveness of BMW practices at Yashoda Hospital.

CHAPTER 1

ABOUT YASHODA HOSPITAL

The Yashoda Super Speciality Hospitals' Cancer Institute was founded by Dr. Dinesh Arora in 2019 with the unwavering goal of becoming a one-stop shop for offering medical and counselling-based treatments to all of our cancer patients. We take great satisfaction in being one of the top medical facilities for accurately detecting and successfully treating a wide range of cancer-based problems, so if you're looking for Medical Oncology therapies in Delhi NCR, your search ends at our welcome mat.

Our skilled oncologists have access to a wide range of medical oncology treatment trajectories to combat their cancers and feel better. These treatments include standard and experimental restorative techniques with chemotherapy and other biological therapies. The Hospital is considered to be one of the most reputed hospitals of Western U.P.

Yashoda Hospital is located in the heart of the city, easily accessible from all the corners of Ghaziabad.

With two buildings, 310 beds, and super specialties, including orthopaedics, Plastic surgery, Medical oncology, Surgical oncology, Radiation oncology, Haematology, Robotic surgery, General surgery, Nephrology, Urology, Internal medicine, Pulmonology and many others, the hospital is surrounded by lush flora.

IPD Beds of a number of categories General, Semi-private, Private and Chemo Wards are catering to varied requirements of our valued patients.

MISSION

Serving all people through exceptional health care, persistent quality, sympathy, respect and community outreach.

VALUES

Guide for Institutional and Organizational behaviour at Yashoda Super speciality and Cancer Institute is **CARE** which stands for

-C for compassionate care for our patients and their loved ones

- A for accountability, transparency and honesty in our services

- R for respect towards our patients, their loved ones and towards each other

- E for excellence in everything we do

As a part of social corporate responsibility, Yashoda Hospital conducts no cost Health screening camps, free OPDs and has dedicated facilities for the unprivileged patients.

INTRODUCTION

Biomedical waste management (BMW) was a crucial component of healthcare systems, aimed at ensuring the safety of patients, healthcare workers, and the environmental system. Proper handling, segregation, and disposal of the BMW helped lower the risk of infections and contamination, prevented environmental pollution, and ensured adherence to legal and regulatory frameworks. Globally, the World Health Organization (WHO) had reported that about 15% of all healthcare waste was hazardous, containing infectious, toxic, or radioactive substances that could pose significant threats to human health and the environment if not properly managed.

Despite the critical importance of BMW, its management remained a challenge for many healthcare institutions, including hospitals. Ineffective BMW management had led to severe public health hazards, due to unsafe disposal practices leading to the spread of disease such as hepatitis B, hepatitis C and HIV. According to WHO, more than 16 billion injections were administered annually, but a large number of these needles were not safely disposed of, exacerbating the risk of disease transmission and environmental harm.

In this context, the role of staff nurses was pivotal. Nurses were directly involved in patient care and waste handling processes, making their knowledge, attitudes, and practices (KAP) concerning BMW central to maintaining high standards of waste management. As primary caregivers, their adherence to BMW protocols had been essential to safeguarding public health and environmental safety. However, studies had shown that in many healthcare settings, nurses' understanding and practice of BMW protocols had been inconsistent, leading to lapses in safety standards.

Yashoda Hospital in Ghaziabad, like many other healthcare facilities, has faced on-going challenges in effectively managing biomedical waste. Understanding the KAP of staff nurses in this context has been crucial to identifying strengths and weaknesses in existing practices and informing the development of targeted interventions. Enhancing BMW management through improved nurse training and awareness could have significantly reduced health risks and environmental damage.

This research aimed to evaluate the KAP of staff nurses at Yashoda Hospital regarding BMW. Additionally, the study explored how demographic factors age, education, year of experience and prior training in BMW influenced nurses' KAP. By identifying gaps in knowledge and practice, the research sought to provide actionable recommendations that could improve BMW management at the hospital, ultimately contributing to better compliance, safety, and environmental protection.

The findings of this study were expected to contribute to the broader understanding of BMWM in healthcare settings and provide practical insights into developing effective training programs and policy interventions to enhance BMW practices.

CHAPTER 2
REVIEW OF LITERATURE

The literature review is organized under the following headings:

1. Literatures related to Bio medical waste management.

2. Literature related to knowledge, attitude, and practice regarding Bio-medical waste management among nursing personnel.

Literatures related to biomedical waste management.

Biomedical waste management (BMWM) has become a pressing concern in healthcare as result of fast population growth and advancements in medical care. A descriptive study conducted in Khuzestan, Iran, highlighted the environmental challenges posed by the disposal of approximately 1750 tons of solid waste daily, largely due to the region's increasing population.

The study utilized the Analytical Hierarchy Process (AHP) to evaluate hospitals' contributions to the total waste load, revealing that hospitals near Ahvaz generated over 43% of the region's hospital waste. The research underscored the necessity of improving waste management techniques rather than building new facilities and informed the creation of a master plan for hospital waste management (Connell, 2006).

Another study assessed the knowledge, attitudes, and practices (KAP) of nurses in BMW management, particularly at Yashoda Hospital. It uncovered significant gaps in the staff nurses' understanding and application of BMW protocols. The study recommended regular training and awareness programs to address these deficiencies, as improper management practices could lead to health hazards and environmental pollution.

In a study conducted in hospitals across Oregon, Washington, and Idaho, researchers found that nearly half of the hospitals failed to segregate infectious waste from non-infectious waste, largely due to confusion over waste definitions. Most hospitals relied on private haulers to transport medical waste to treatment facilities, while other common disposal methods included

autoclaving, sewage disposal, and landfilling. Strict air pollution regulations had led to the

discontinuation of incineration in many hospitals, although hospitals in Laho continued using

incinerators due to the absence of specific regulations (Agrawal & Singh, 2005).

In Pondicherry, a case study at Government General Hospital reported serious health risks from

the improper disposal of non-segregated BMW. The study called for stricter regulations on

handling, transport, storage, and disposal of BMW, especially given the rise of medical tourism

in India. After the implementation of BMW guidelines, waste segregation practices showed

significant improvement.

An investigation of Balarampur Hospital revealed a lack of proper waste management systems,

primarily due to inadequate education, awareness, and trained staff. The hospital also faced

financial constraints, which hindered its ability to meet statutory waste disposal obligations.

Tamplin et al. and Tsakona et al. studied the risks associated with improper disposal of

syringes and other hospital waste. Tamplin et al. found that syringe reuse posed severe health

risks, including the spread of HIV and hepatitis. Tsakona et al., in their study of hospitals in

Greece, found that poor waste segregation increased the quantity of infectious waste and

significantly raised disposal costs.

Overall, these studies emphasized the importance of comprehensive BMW management

strategies. Effective management requires not only technical improvements but also proper

training for healthcare professionals to ensure adherence to best practices.

Literature related to knowledge, attitude, and practice regarding Bio-medical waste management among nursing personnel.

To expand on the existing literature on knowledge, attitude, and practices (KAP) regarding biomedical waste management (BMWM) among nursing personnel, it is evident that a substantial amount of research underscores the significance of effective waste management practices in healthcare settings. However, significant gaps remain in terms of awareness, knowledge, and consistent practice, especially among non-medical staff and auxiliary healthcare workers.

A cross-sectional study from a tertiary care hospital highlighted that knowledge levels about BMW management differ notably between different categories of healthcare personnel. Medical professionals demonstrated the highest level of awareness, while non-medical staff, such as cleaning personnel, exhibited the lowest. These findings suggest that even within the structured environment of a hospital, knowledge disparities can significantly affect the efficacy of BMW management. This highlights the necessity for on-going and regular training programs that target all levels of healthcare staff to ensure adherence to BMW management protocols.

Another study conducted in Sabarkantha district, Gujarat, covering 30 hospitals, revealed critical gaps in knowledge even among medical professionals. While doctors were generally aware of the legal aspects of BMW management, they lacked detailed operational knowledge of proper waste handling, segregation, and disposal techniques. Alarmingly, auxiliary staff, including ward boys and sweepers, exhibited poor awareness of risks associated with improper BMW handling, such as the transmission of blood borne diseases like HIV and hepatitis. These findings underline the need for comprehensive training interventions that not only focus on

medical staff but also cover non-medical personnel who are involved in the waste handling process.

A case-based study focusing on healthcare waste management systems in hospitals found that most facilities lacked efficient waste segregation, collection, and disposal systems. Using a modified WHO survey questionnaire, the study exposed several hazards linked to inadequate BMW management, such as contamination risks and exposure to harmful pathogens. Such issues point to the critical need for healthcare institutions to adopt standardized BMW management protocols and invest in training programs that educate staff on these systems.

The study conducted at Government SMHS Hospital in Srinagar offered detailed insights into the KAP of doctors, nurses, and paramedical staff. It found that while 86% of doctors had adequate knowledge of BMW hazards and associated health risks, only 58% of nurses demonstrated sufficient awareness, and paramedical staff showed significant gaps, with just 11% indicating a positive response regarding their knowledge of BMW. These disparities call attention to the need for tailored training programs focusing on the role of nursing personnel in ensuring effective waste management.

In Agra, a study across fourteen healthcare facilities, including government and private units, further reinforced the theme of inconsistent knowledge and practice across various healthcare sectors. Even qualified hospital staff displayed a lack of awareness of BMW regulations, highlighting the urgent need for systematized BMW training that spans across different strata of healthcare facilities. The study also underscored the importance of periodic assessments and audits to ensure that healthcare personnel maintain compliance with evolving BMW management guidelines.

Adding to these findings, studies have demonstrated that unsafe disposal of healthcare waste leads to dangerous public health outcomes. According to WHO, approximately 16 billion injections are administered globally each year, and a significant proportion of these needles are not disposed of safely. This disposal heightens the risk of transmitting diseases like hepatitis B, hepatitis C, and HIV, as well as other environmental hazards. Furthermore, healthcare workers, especially nursing staff, are on the frontlines of managing these risks, as they are directly involved in the disposal process of biomedical waste.

The literature collectively suggests that enhancing the knowledge and practices of nursing personnel in BMW management can have a direct impact on reducing these risks. Nurses, who spend the most time in patient care and handling of biomedical waste, need targeted interventions to bridge the gaps in their KAP. It is also evident that demographic factors such as education level, years of experience, and prior training in BMW management significantly influence these KAP among nursing staff.

Future research should focus on the development of structured and sustainable training programs that not only educate staff but also continually reinforce best practices in biomedical waste management. Additionally, healthcare facilities should consider routine assessments and audits to monitor compliance and address gaps in KAP, especially among nursing personnel who play a critical role in maintaining patient and environmental safety.

CHAPTER-3
METHODOLOGY

AIM:

● Evaluating the Knowledge, Attitudes, and Practices of Biomedical Waste Management Among Staff Nurses at Yashoda Hospital, Ghaziabad

OBJECTIVE:

● A study to assess the knowledge, attitude, and practice regarding biomedical waste management among staff nurses in a Yashoda hospital at Ghaziabad.

● To associate the knowledge, attitude and practice of staff nurses with selected demographic variables**.**

METHODOLOGY:

 Study variable:

● Research variables-knowledge, attitude, and practice of staff nurse regarding biomedical waste management.

● Demographic variables: Age, sex, education, Department presently working, experience and in service education on BMWM.

 Data collection tools and techniques

● A sampling technique involves selecting representative units from a population for research study purposes.

● Purposive Sampling Technique refers to as Conscious selection of certain subjects by researchers of certain subjects to include in the study.

 Study Design-

● Choosing a research design is a crucial step in the research process, as it provides the overall framework for carrying out the study the detailing plan, structure, and approach for the investigation.

◻ **Study Area-**

● The study was conducted at Yashoda Hospital at Ghaziabad.

◻ ***Study population-***

● In this area the sample size was 60 staff nurses.

◻ ***Sample –***

● In this area those who have met the inclusion criteria and willing to participate for study were selected as samples.

◻ **Inclusion Criteria -**The study included the staff nurses who:

● Are working in the selected hospital

● Are available at the time of data collection

◻ **Exclusion Criteria-**The study excluded the staff nurse who:

• Newly joined staff (< 1 month)

• Educators/ ICN

◻ **Technique for data collection:**

In this study, data was collected using self-administration methods.

☐ **Description of the Tool:**

A structured knowledge questionnaire was used to evaluate the knowledge and a 5 Point Likert Scale was prepared to evaluate the Attitude regarding Biomedical waste management and structure practice questionnaire to assess the Practice. The tool was prepared by experts by the Investigator after reviewing the literature and Consultation with experts.

The instrument consists of 3 Parts:

Part 1: -

SECTION-A: Socio, demographic variables

SECTION-B: Structured questionnaire was used to assess the Knowledge of staff nurses.

Regarding biomedical waste management **25 Questions were used.**

Part 2: -

A 5-point Likert scale was used to evaluate the attitudes of staff nurses. It included 15 statements with five response options: Strongly Agree, Agree, Uncertain, Disagree, and Strongly Disagree. Each statement was scored as 5, 4, 3, 2, and 1, respectively.

Part 3: -

In this phase, structured items on practices regarding biomedical waste management

Formulated (25) to assess the practice. They were motivated and requested to refer to it to update their knowledge and practices. It is measured by yes/no question.

Scoring Procedure:

For knowledge, attitude, and practice assessment

 For answers: If answer is correct 1, If answer is incorrect 0

Scoring Interpretation:

Based on the percentage gained by the staff nurse, the respondent's knowledge and practice was

categorized as the following group.

□ For knowledge assessment:

Good   : 75-100%

Average: 50-75%

Poor: Below 50%

□ For attitude scale:

Favourable   : Above 75%

Moderately favourable: 50 – 75

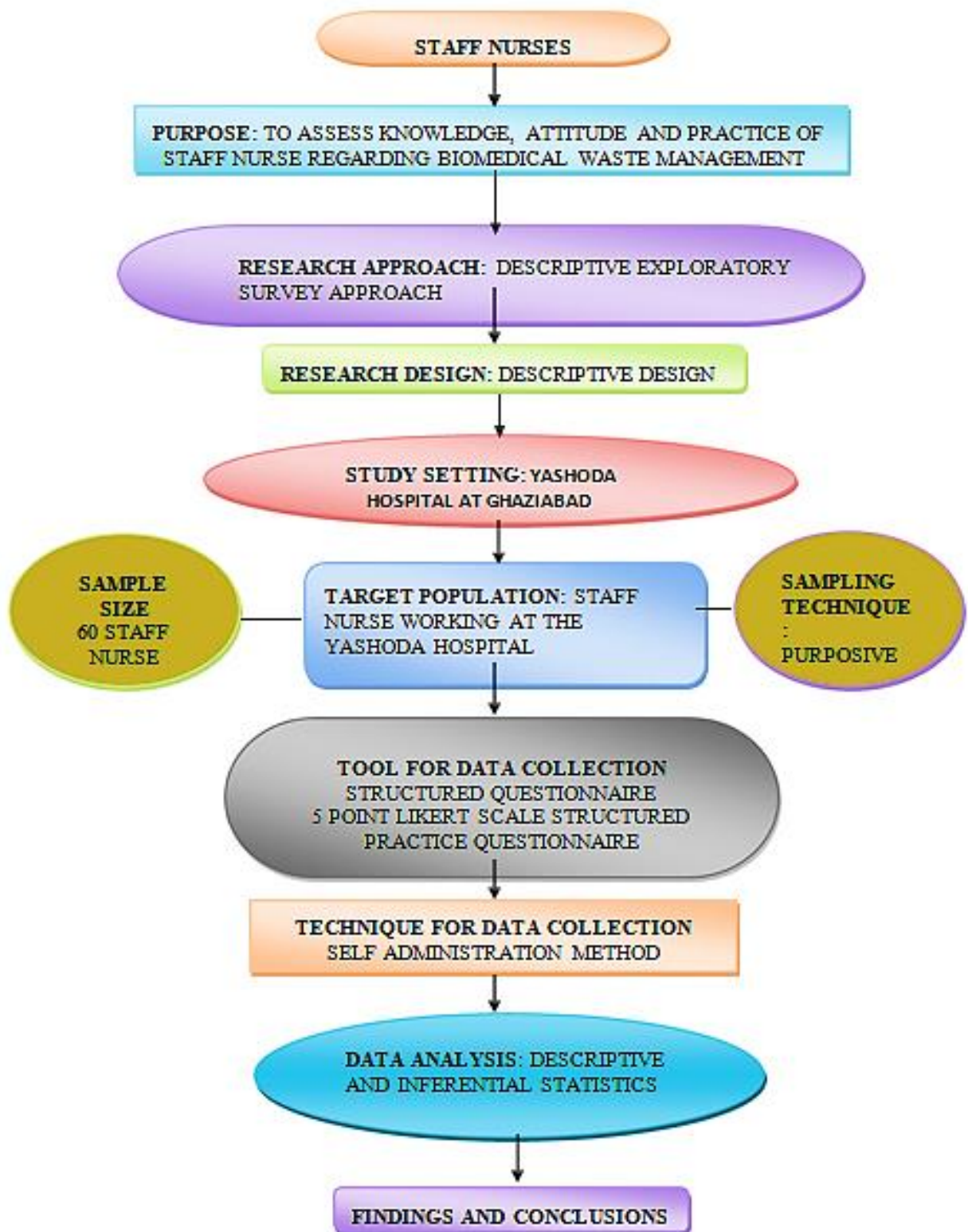Unfavourable   :   Below 50%

□ For practice scale:

 Favourable   : Above 75%

 Moderately favourable: 50 – 75%

 Unfavourable   : Below 50%

PROCESS MAPPING

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                    ┌─────────────────────┐
                    │    STAFF NURSES     │
                    └─────────────────────┘
                              │
                              ▼
          ┌─────────────────────────────────────────────┐
          │ PURPOSE: TO ASSESS KNOWLEDGE, ATTITUDE AND   │
          │ PRACTICE OF STAFF NURSE REGARDING BIOMEDICAL │
          │ WASTE MANAGEMENT                             │
          └─────────────────────────────────────────────┘
                              │
                              ▼
          ┌─────────────────────────────────────────────┐
          │ RESEARCH APPROACH: DESCRIPTIVE EXPLORATORY   │
          │ SURVEY APPROACH                             │
          └─────────────────────────────────────────────┘
                              │
                              ▼
          ┌─────────────────────────────────────────────┐
          │ RESEARCH DESIGN: DESCRIPTIVE DESIGN          │
          └─────────────────────────────────────────────┘
                              │
                              ▼
          ┌─────────────────────────────────────────────┐
          │ STUDY SETTING: YASHODA HOSPITAL AT GHAZIABAD │
          └─────────────────────────────────────────────┘
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                              ▼
┌──────────┐      ┌─────────────────────────┐      ┌──────────────┐
│ SAMPLE   │──────│ TARGET POPULATION: STAFF │──────│ SAMPLING     │
│ SIZE     │      │ NURSE WORKING AT THE     │      │ TECHNIQUE:   │
│ 60 STAFF │      │ YASHODA HOSPITAL         │      │ PURPOSIVE    │
│ NURSE    │      └─────────────────────────┘      └──────────────┘
└──────────┘                  │
                              ▼
          ┌─────────────────────────────────────────────┐
          │ TOOL FOR DATA COLLECTION                     │
          │ STRUCTURED QUESTIONNAIRE                      │
          │ 5 POINT LIKERT SCALE STRUCTURED              │
          │ PRACTICE QUESTIONNAIRE                        │
          └─────────────────────────────────────────────┘
                              │
                              ▼
          ┌─────────────────────────────────────────────┐
          │ TECHNIQUE FOR DATA COLLECTION                │
          │ SELF ADMINISTRATION METHOD                   │
          └─────────────────────────────────────────────┘
                              │
                              ▼
          ┌─────────────────────────────────────────────┐
          │ DATA ANALYSIS: DESCRIPTIVE AND INFERENTIAL   │
          │ STATISTICS                                   │
          └─────────────────────────────────────────────┘
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                 ┌───────────────────────────┐
                 │ FINDINGS AND CONCLUSIONS   │
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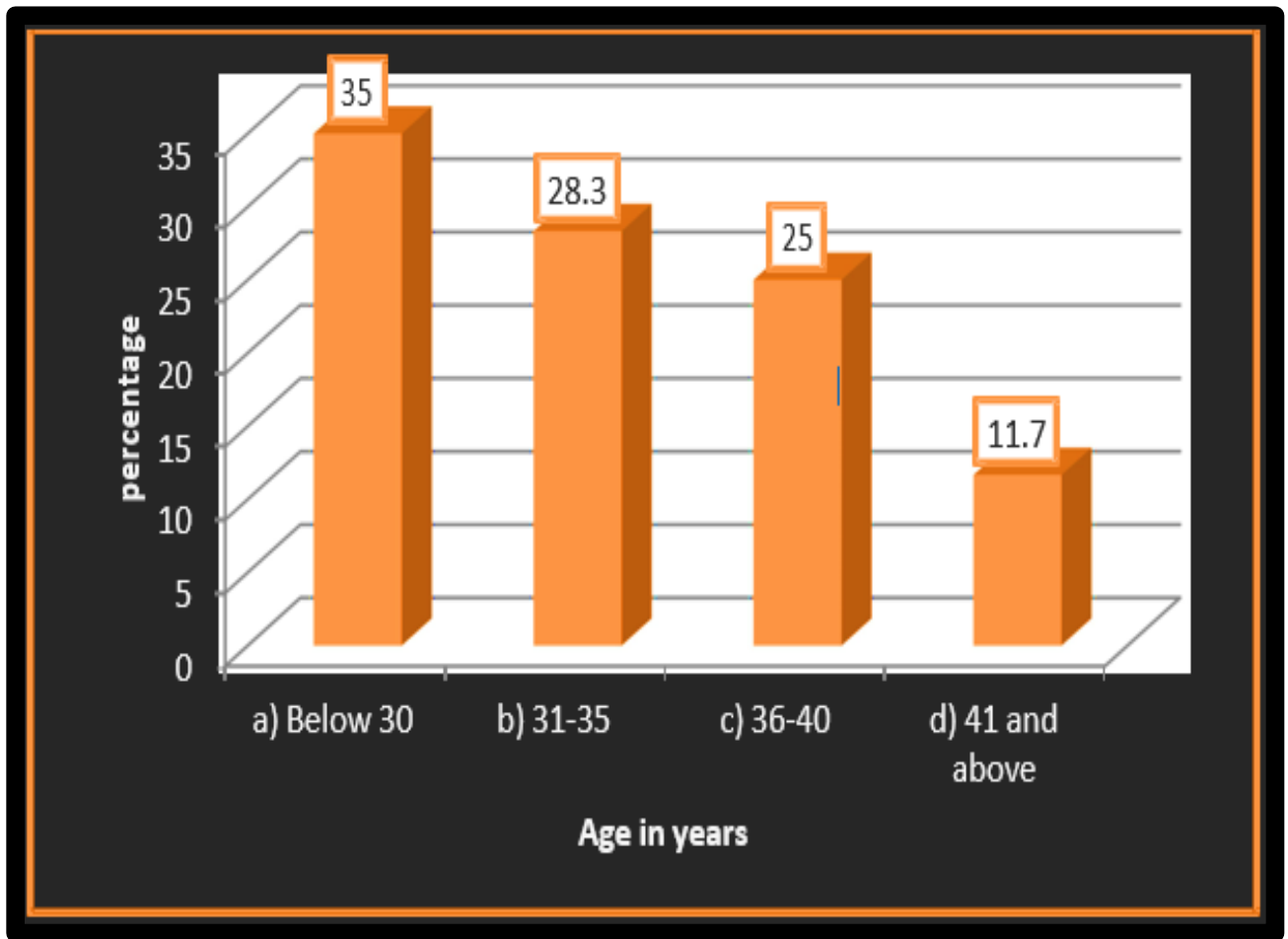
CHAPTER- 4 RESULT

Section A: Description of demographic profile of the sample

Table - 1: Frequency and percentage distribution of staff nurse according to demographic variables.
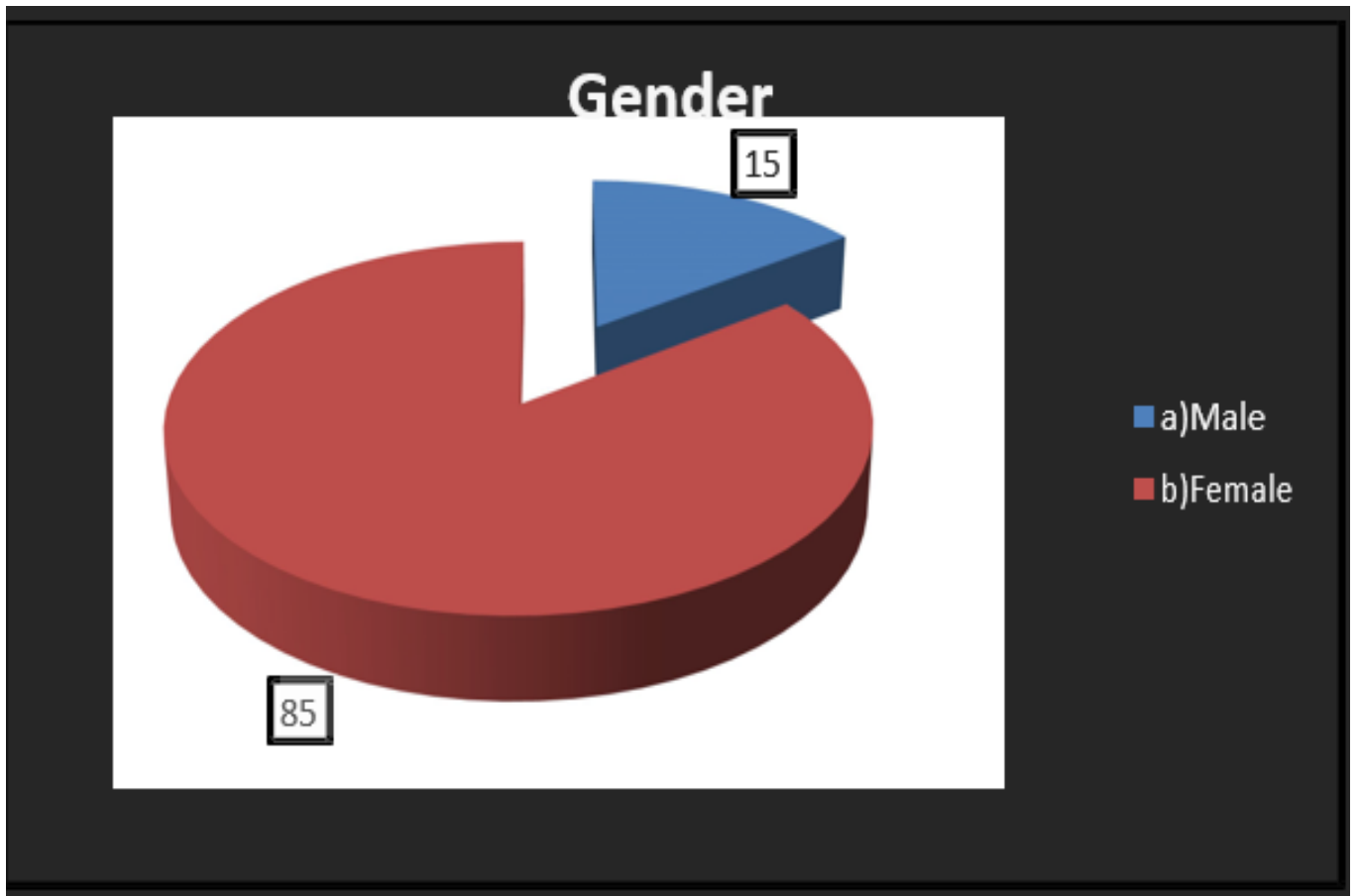
N=60

Sl no	Demographic variables	No	%
1	Age		
	a) Below 30	21	35
	b) 31-35	17	28.33
	c) 36-40	15	25
	d) 41 and above	7	11.67
2	Gender		
	a)Male	9	15
	b)Female	51	85
3	Professional education		
	a) ANM	3	5
	b) Diploma	32	53.33
	c)Graduate	25	41.67
4	Presently working area		
	a) Ward	22	36.67
	b) ICU	11	18.33
	c) OT & Labour room	9	15
	d)Casualty	10	16.67

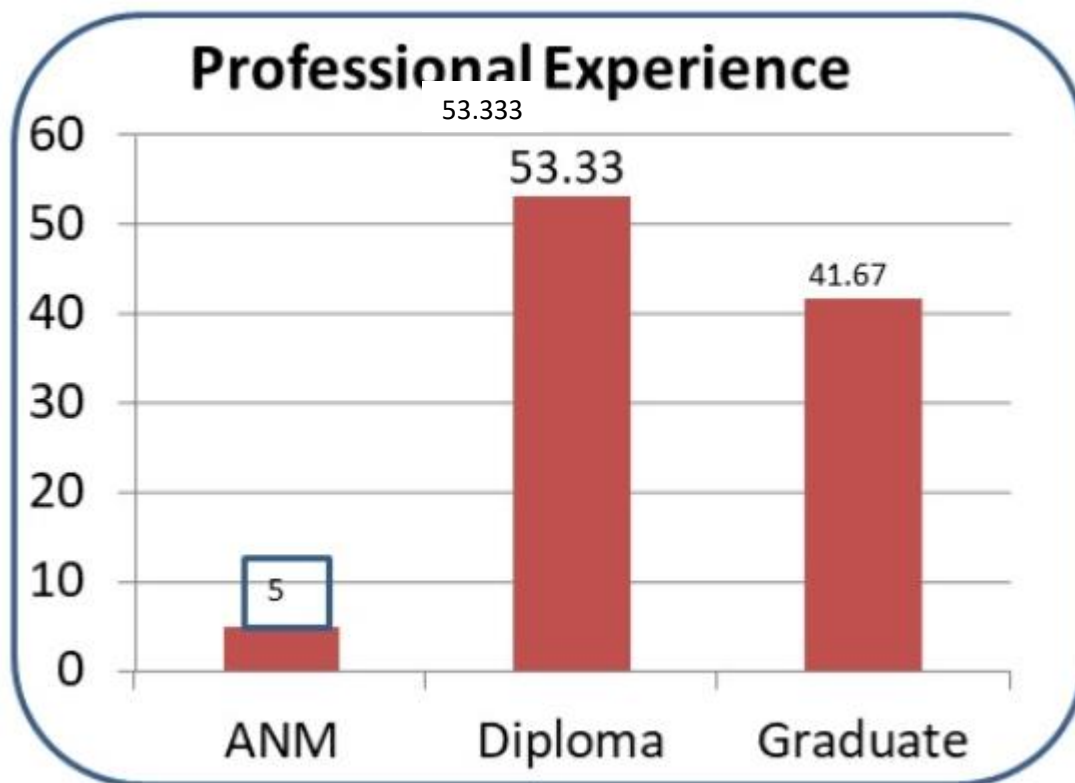|				
	e)Other		8	13.33
5	**Total years of experience**			
	a) 0-5		43	71.67
	b) 6-10		11	18.33
	c) 11-15		5	8.333
	d) 16 and above		1	1.667
6	**In service education**			
	a) Yes		95	57
	b) No		05	03

❖ **Age profile of staff nurses analysing the percentage Distribution Across the age group**

The frequency and distribution by age shows that Majority (35%) were less than 30 years old,

additionally 28.3% were between 31-35 years, 25% were fall within the 36-40 years age range

and 11.7% were 41 years old and above.

Gender

15

■ a)Male

■ b)Female

85

❖ **Workforce gender Distribution in nursing trends among staff nurses**

Describe about the frequency percentage distribution of socio-demographic variable of staff nurse according to sex. Majority of them (85%) were female and (15%) were male.

Professional Experience

60 — 53.333

53.33

50

41.67

40

30

20

10 | 5 |

0

ANM   Diploma   Graduate

❖ **Professional Experience and workforce composition : Analysing**
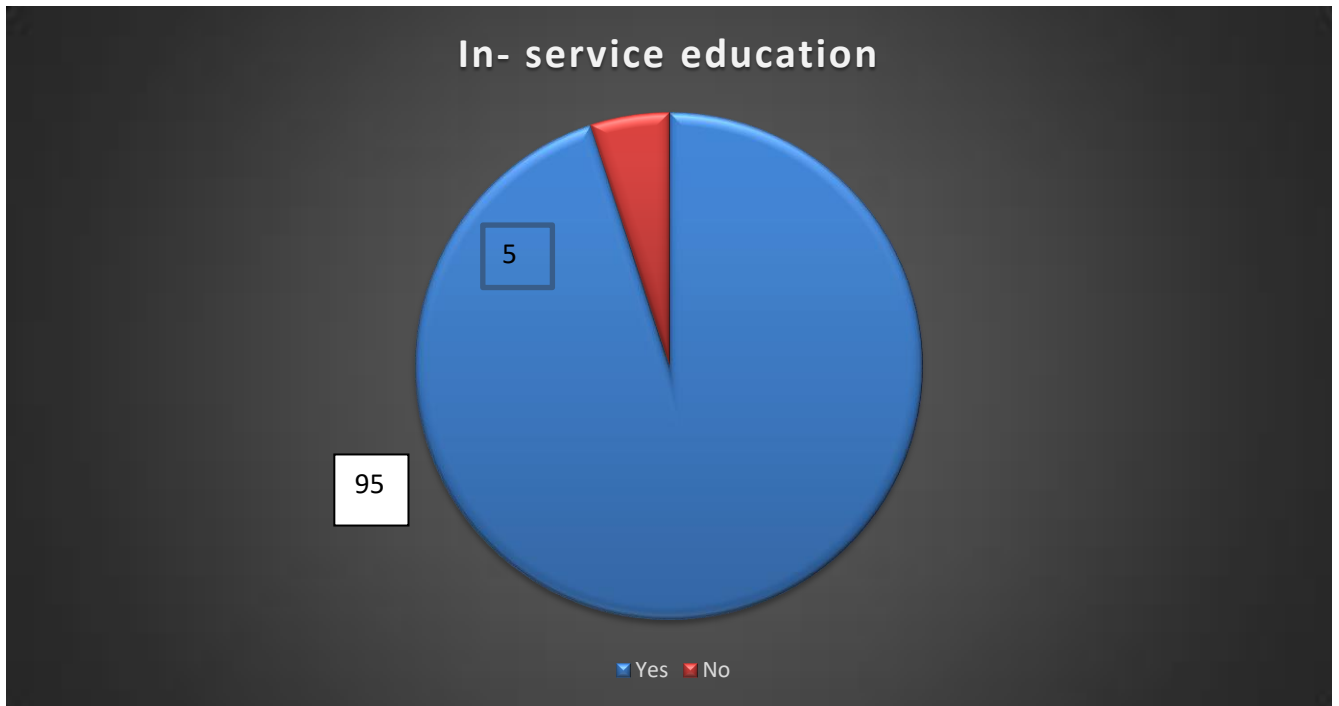
Describe about the frequency and the percentage distribution socio-demographic of staff nurse according to professional experience.

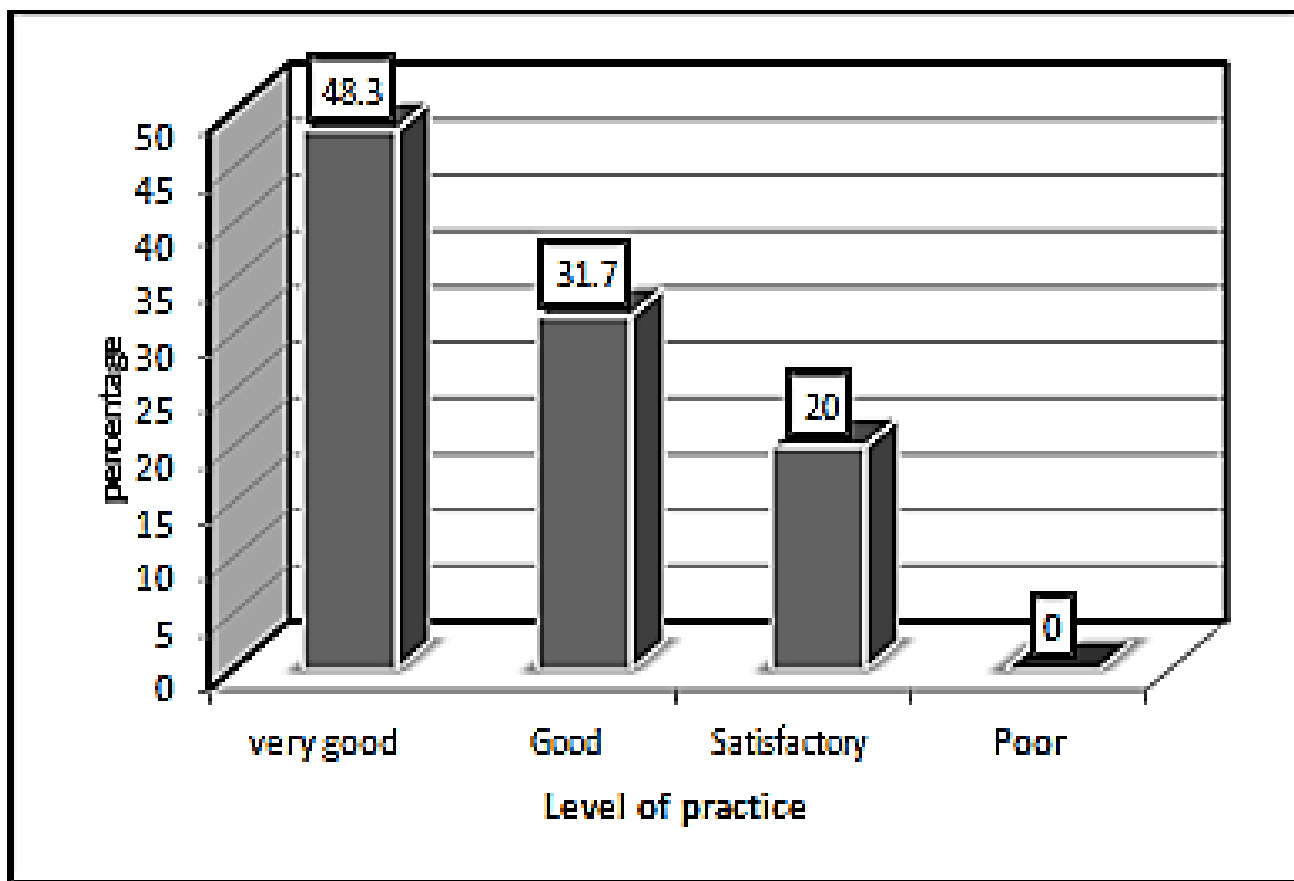Majority of them (41.66%) are graduate, (53.33%) are diploma and (5%) remaining are ANM.

❖ **Distribution of staff nurses by year of experiences**

The frequency and percentage distribution of socio-demographic variables of staff-nurse according to total experience. Majority of them (71%) are 0-5 years, (18.4%) are 6-10 years, (8.3%) are 11-15 years and (1.7%) are 16 and above experience.
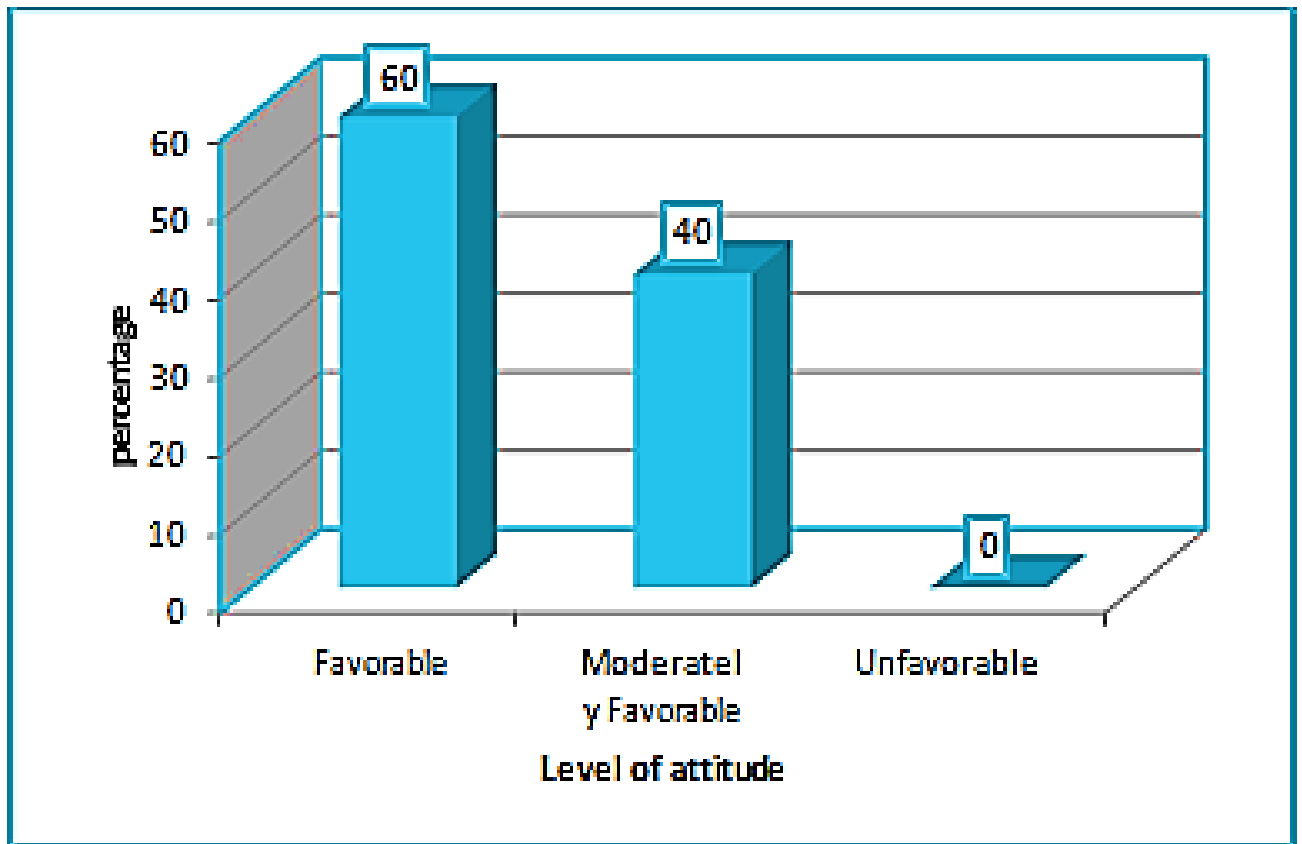
In- service education

5

95

Yes   No

❖ **In-service education and its impact on nursing workforce: A study of percentage distribution Among staff nurses**

Describe about the frequency and percentage distribution of socio-demographic variables of

staff – nurse according to in-service education. Majority of them (95%) are attended in-service

education and (5%) are not attended in-service education.

❖ **Professional experience and workforce composition analysing**

Depict practice regarding to BMWM among staff- nurse which state that (48.3%) are very good, (31%) are good, (20%) are satisfactory and (0%) are poor.

Figure showing percentage vs Level of attitude: Favorable 60, Moderately Favorable 40, Unfavorable 0.

❖ **Understanding the attitude of staff nurses towards BMWM practices**

Depict about attitude regarding BMWM among staff nurse which state that (0%) of them are

unfavourable, (40%) of staff nurse had a moderately favourable condition attitude and (60%) of

staff nurses had a favourable attitude.

CHAPTER -5

DISCUSSION

- Investigate the knowledge and understanding of biomedical waste management practices by staff nurses.

- Assess the perception and determine attitude towards impact of biomedical waste management on the health and environment.

- Examine their knowledge with color-coded waste bins and the types of waste assigned to each bin.

- Identify any difference between their knowledge and attitudes versus their practical application.

- Propose ways to improve attitudes, such as through motivational training sessions or awareness campaigns.

CHAPTER-6

CONCLUSION

- The level of knowledge among staff nurses regarding BMWM varied, indicating the need for improved and on-going educational programs to ensure all nurses were well-versed in the latest regulations and best practices.

- Staff nurses generally exhibited a positive attitude toward biomedical waste management, recognizing its significance for the safety of patients, staff, and the environment, but this positive attitude did not always translate into practice due to practical barriers hindering effective implementation.

- Observations of practices among staff nurses revealed a mix of compliance and non-compliance with established biomedical waste management protocols, attributed to factors such as a lack of resources, insufficient training, and time constraints.

- Significant associations were found between specific demographic variables and the knowledge, attitudes, and practices of biomedical waste management among staff nurses, with younger nurses or those with less experience demonstrating gaps in knowledge and practice.

- The importance of training in BMWM was emphasized, as a lack of comprehensive knowledge negatively impacted the proper disposal of waste.

CHAPTER-7

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SECTION-B

QUESTIONNAIRE

1. **Bio-medical waste means:**
   - a. "Any solid"
   - b. liquid waste
   - c. solid and liquid waste
   - d. None of the above

2. **Bio Medical waste consists of:**
   - a. Human anatomical waste
   - b. Animal wastes generated during research from veterinary hospitals
   - c. Microbiology and biotechnology wastes
   - d. All the above

3. **Biomedical waste categories into:**
   - a. 9 categories
   - b. 10 categories
   - c. 12 categories
   - d. 7 categories

4. **When you find biomedical waste in regular waste, which of these things should you do?**
   - a. Fill out an AEMS report
   - b. Notify the area leader
   - c. Notify your Service Coordinator
   - d. All the above

5. **The general waste is put into:**
   - a. Containers lined with black bags
   - b. Containers lined with clear bags
   - c. Sharps containers
   - d. Containers lined with yellow bags

6. **The clean, unbroken, or broken glass waste to be disposed of:**
   - a. Into containers lined with black bags

- b. Into containers lined with clear bags
- c. Into a cardboard box lined with a black bag and taped. For small quantities of broken glass, put into sharp containers
- d. Into containers lined with yellow bags

7. **Statement describing one type of biomedical waste:**
   - a. Materials that may be poisonous, toxic, or flammable and do not pose a disease-related risk
   - b. Waste that is saturated to the point of dripping with blood or body fluids contaminated with blood
   - c. Waste that does not pose a disease-related risk
   - d. None of the above

8. **Waste Sharps can be one of the following:**
   - a. Cotton
   - b. Dressings
   - c. Syringes
   - d. Soiled plaster casts

9. **Anatomical waste should be disposed into:**
   - a. Red containers
   - b. Sharps containers
   - c. Containers lined with yellow bags
   - d. Containers lined with black bags

10. **Objects that may be capable of causing punctures or cuts, should be disposed into:**
    - a. Containers lined with black bags
    - b. Containers lined with clear bags
    - c. Sharps containers
    - d. Containers lined with yellow bags

11. **Sharps/needles to be disposed into:**
    - a. Red pails
    - b. Yellow hard-plastic sharps containers
    - c. Containers lined with yellow bags
    - d. Boxes lined with black/dark green bags

12. **The correct type of containers for storing flammable waste prior to disposal via UBC are:**
   - a. Glass bottles
   - b. Plastic jugs
   - c. Yellow containers
   - d. Red cans

13. **Radioactive waste is disposed into:**
   - a. Specific packaging criteria set out by the Atomic Energy Control Act
   - b. Into containers lined with yellow bags and labeled radioactive waste
   - c. Into containers lined with clear bags and labeled radioactive
   - d. None of the above

14. **Cytotoxic waste should be placed into:**
   - a. Yellow Container
   - b. Grey Container
   - c. Red Container
   - d. White Container

15. **Chemical disinfectants are:**
   - a. Sodium hypochlorite
   - b. Dissolved chlorine dioxide
   - c. Per acetic acid
   - d. All the above

16. **Segregation refers to:**
   - a. Waste minimization
   - b. Waste separation
   - c. Waste collection
   - d. All the above

17. **The steps to take if you are exposed to blood or other infectious materials are:**
   - a. Needle sticks or sharps injuries should be immediately washed with soap and water
   - b. Irrigate eyes with an eye wash for 10 to 15 minutes
   - c. Report the incident to your supervisor and seek Immediate Medical treatment
   - d. All the above

18. **Ash from incineration of any biomedical waste should be disposed into:**
    - a. Blue bag
    - b. Red bag
    - c. Yellow
    - d. Green

19. **Solid waste is treated with:**
    - a. Autoclave
    - b. Microwave
    - c. Chemicals
    - d. All the above

20. **Human Anatomical Waste disposed by:**
    - a. Incineration@ / deep burial
    - b. Local autoclaving
    - c. Microwaving
    - d. Chemical treatment

21. **Discarded Medicine and Cytotoxic drugs disposed by:**
    - a. Drugs disposal in secured landfills
    - b. Microwaving
    - c. Autoclaving
    - d. None of the above

22. **The duration of storage should not exceed:**
    - a. 8-10 hrs in big hospitals
    - b. 1-2 hrs in big hospitals
    - c. 4-5 hrs in big hospitals
    - d. More than 10 hrs

23. **Personnel safety devices are:**
    - a. Gloves
    - b. Apron
    - c. Gown
    - d. All the above

24. **Thermal processes utilize:**
    - a. Chemical

- b. Heat
- c. Compaction
- d. Shredding

25. **Principles of biomedical waste management are:**
- a. Reducing
- b. Reusing
- c. Recycling principles
- d. All the above

**ATTITUDE SCALE FOR THE STAFF NURSE REGARDING
BIO-MEDICAL WASTE MANAGEMENT**

SL. NO	ITEMS	RESPONSES				
		Strongly Agree (5)	Agree (4)	Uncertain (3)	Disagree (2)	Strongly Disagree (1)
1.	All human activities Produce waste.					
2.	hospitals and other health care facilities generate lots of waste which can transmit infections					
3.	Soiled Waste means Items contaminated with body fluids					

4.	Liquid Waste means Waste generated from the laboratory and washing, cleaning, housekeeping, and disinfecting activities				

5.	Incineration Ash means ash from incineration of any biomedical waste.				
6.	Discarded Medicine and Cytotoxic drugs put into black color-coding bag				
7.	Segregation reduces the amount of waste				

8.	Segregated wastes of distinct categories need to be collected in identifiable containers				
9.	The waste should be transported for treatment either in trolleys or in covered wheelbarrow				
10.	Microwaving is a process which disinfects the waste by moist heat				
11.	Waste to be incinerated shall not be chemically treated with any chlorinated disinfectants.				
12.	Deep Burial a pit or trench should be dug about 2				

	m deep				
13.	Improper practices Such as dumping of bio-medical waste in municipal dustbins, open spaces, water bodies lead to the spread of diseases.				
14.	Proper attention should be given to the collection of the spilled mercury				
15.	The microwave should completely and consistently kill bacteria and other pathogenic organism				

TOOL III

PRACTICE QUESTIONNAIRE ON BIOMEDICAL WASTE MANAGEMENT

Check list by self-report method to assess the level of practice. Please place the tick(√) in appropriate column.

SL.NO	CONTENT	YES	NO
	PHASE I BIOMEDICAL WASTE MANAGEMENT		
1.	Are you categorizing the clinical waste before disposing		
2	Do you recap the needle after use		
3	Do you place the used needles in puncture proof Container		
4	Do you wash the syringe and needle after giving injection and drawing blood		
5	Do you bent and break the needle after use		
6	Do you discard the needle along with the syringe		
7	Are you following the color code system to dispose clinical waste		
8	Do you dispose the liquid waste in black color bag		
9	Are you dumping infectious waste materials in red color bag?		
10	Are you disposing waste sharps in blue color bag		
11	Do you check the blood bag for screening label		

12	Do you check sterilization date of instruments before Use		
13	Do you wash the used instruments before using to the other patients		
14	Do you disinfect the equipment frequently		
15	Do you wash hands before and after patient contact		
16	Do you wear the gloves while drawing blood		
17	Do you use same gloves to examine all patients in the Ward		
18	Do you wear goggles and apron while giving injections		
19	Do you wear apron when handling soiled linen		
20	Do you squeeze and wash the area after an accidental Injury		
21	Do you report injury to infection control department		
22	Do you dispose the used needles in common dust bin		
23	Ampoules containing heavy metals can be incinerated		
24	Have you received Hepatitis B vaccination		
25	Have you taken booster doses		

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