

**STUDY ON KNOWLEDGE, AWARENESS AND PRACTICES OF BIOMEDICAL
WASTE MANAGEMENT AND INFECTION CONTROL AMONG HOSPITAL STAFF
AT EYE Q VISION PVT. LTD., GURGAON (HARYANA)**

Presenter name

EYE Q VISION PVT. LTD.

- The Eye-Q hospital chain is committed to providing best quality eye care at affordable cost across India. We are an ISO 9001-2015 registered organization operating under the leadership of our Founder and CMD- Dr. Ajay Sharma- one of the most renowned eye surgeons in India, aided by a team of specialists with rich experience in their respective specialties from top hospitals across the country.
- Established in 2007, Eye-Q is today a chain of 38 super specialty eye hospitals

VISION

- To be India's foremost chain of eye hospitals in terms of both Quality of eye care and the Number of patients handled.

MISSION

To make every patient an Ambassador for Eye-Q through a combination of
Highest level of quality and technology in eye care; complete integrity to patient needs.

VALUES

- Be honest and open in my communication and do what I say I will do
- I accept our individual & team responsibility and meet my commitments each & every time
- Give care, compassion & respect to patients and colleagues as I expect for myself
- Proud of Eye Q



INTRODUCTION

Any waste formed during the diagnosis, treatment, or immunization of humans or animals, or related research activities, or in the manufacturing or testing of biological or in health camps is referred to as bio-medical waste. Bio-Medical waste is any waste generated by a health-care facility that could have a negative impact on a person's health or the environment in general if not properly disposed of. All trash that has the potential to harm the environment or a person's health is deemed infectious and must be managed according to the BMW Rules, 2016.

It is a growing problem that affects not only hospitals but also the environment. The appropriate management of BMW is critical in any hospital to avoid the negative and damaging consequences that 'Hospital Waste' generated during patient care has on the environment, including humans. Health-care personnel may be exposed to hospital garbage, which poses a health risk. The issue of waste disposal in hospitals and other healthcare facilities has become a major source of concern.

Hospital waste management is a part of hospital hygiene and maintenance activities, according to the Government of India (notification, 1998). This entails overseeing a wide range of tasks, including waste collection, transportation, processing system operation or treatment, and waste disposal.

Need of Biomedical waste Management in Hospitals

The reasons due to which there is great need of management of hospitals waste such as:

1. Sharps injuries resulting in infection in all types of medical employees and waste handlers.
2. Patients contracting nosocomial infections because of poor infection control and waste management.
3. Outside the hospital, there is a risk of infection for waste workers and scavengers, as well as the general people who live near hospitals.
4. Hazardous chemicals and pharmaceuticals pose a risk to anyone who handle garbage at all levels.
5. "Disposable" items are repackaged and sold by shady characters without even being washed.
6. Drugs that have been discarded are repackaged and sold to unwary customers.
7. There is a risk of pollution of the air, water, and soil because of waste or faulty incineration emissions and ash.



SALIENT FEATURES OF BIO-MEDICAL WASTE MANAGEMENT (AMENDMENT) RULES, 2018

Bio-medical waste generators including hospitals, nursing homes, clinics, dispensaries, veterinary institutions, animal houses, pathological laboratories, blood banks, health care facilities, and clinical establishments will have to phase out chlorinated plastic bags (excluding blood bags) and gloves by March 27, 2019.

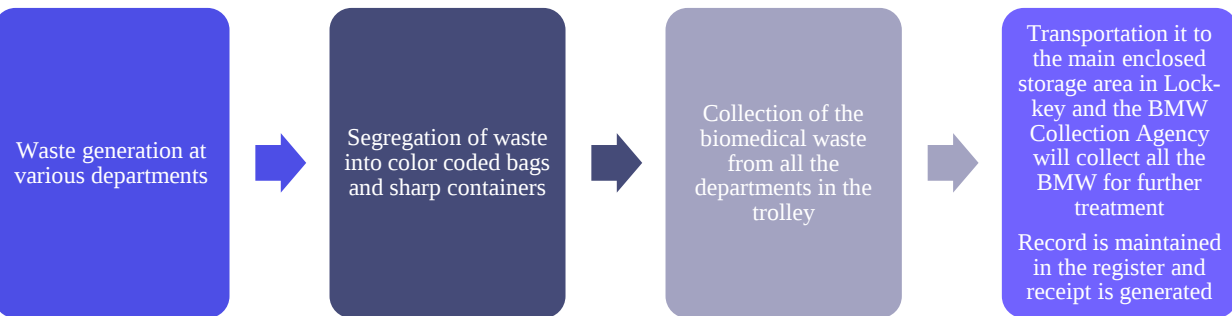
All healthcare facilities shall make available the annual report on its website within a period of two years from the date of publication of the Bio-Medical Waste Management (Amendment) Rules, 2018.

Operators of common bio-medical waste treatment and disposal facilities shall establish bar coding and global positioning system for handling of bio-medical waste in accordance with guidelines issued by the Central Pollution Control Board by March 27, 2019.

The State Pollution Control Boards/ Pollution Control Committees have to compile, review and analyze the information received and send this information to the Central Pollution Control Board in a new Form (Form IV A), which seeks detailed information regarding district-wise bio-medical waste generation, information on Health Care Facilities having captive treatment facilities, information on common bio-medical waste treatment and disposal facilities.

Every occupier, i.e., a person having administrative control over the institution and the premises generating biomedical waste shall pre-treat the laboratory waste, microbiological waste, blood samples, and blood bags through disinfection or sterilization on-site in the manner as prescribed by the World Health Organization (WHO) and then sent to the Common bio-medical waste treatment facility for final disposal.

PROCESS FLOW OF BIOMEDICAL WASTE MANAGEMENT IN THE HOSPITAL



OBJECTIVES OF THE STUDY

1. To determine the knowledge and awareness among hospital staff regarding biomedical waste management policies and practices.
2. To determine their awareness regarding needle stick injury and its prevalence among different categories of health care workers.
3. To assess the current practices of biomedical waste management in the hospital.
4. To access the practices of infection control in the hospital.

METHODOLOGY

- **STUDY DESIGN:** Descriptive Observational Research.
- **SETTING:** EYE Q VISION PVT LTD, GURGAON (HARYANA)
- **SAMPLE SIZE:** A sample size of 45 staff members- including 12 Doctors, 21 Paramedical Staff consisting of Optometrist, OT In charge, OTA, and Staff Nurse & 12 Housekeeping Staff.
- **SAMPLING TECHNIQUE:** Simple Random Sampling Technique has been adopted to perform the study during March – May 2022. The expected sample size is 45.
- **STUDY POPULATION:** -
Inclusion criteria: The inclusion criteria has all the healthcare professionals at the hospital (doctors, optometrist, staff nurse, OTA, and housekeeping staff etc.) who are available for the study and willing to participate.
- **Study tools:** To collect the required data on KAP of biomedical waste management and infection control, **Google Forms** has been used by preparing the following - 1) Questionnaire for Doctors 2) Questionnaire for Optometrist, OTA, and Staff nurse 3) Questionnaire for Housekeeping Staff 4) Observation Checklist.
- **DATA COLLECTION PROCEDURE:** Data has been collected from the hospital staff from all the departments by interacting with the staff and observing the waste management practices. The interactions and observations have been conducted in the form of interviews through structured questionnaire and checklist.
- **DATA ANALYSIS PLAN:** Data has been analyzed with the help of advanced Microsoft Excel function and has been summarized in the form of graphs.

RESULTS

For doctors, staff nurses, and housekeeping staff, a self-structured questionnaire was created.

The Questionnaire was created as part of a framework to assess hospital staff knowledge, awareness, and practices in biomedical waste management, as well as infection control measures. The information was gathered via interacting with the employees and asking them questions from the survey.

Along with the questionnaire, an observation checklist was created, which was used to monitor biomedical waste management and handling techniques, as well as infection control measures.

The data was evaluated using Advanced Microsoft Excel Functions and is reported using graphs.

Knowledge and awareness of Biomedical waste management among hospital staff-

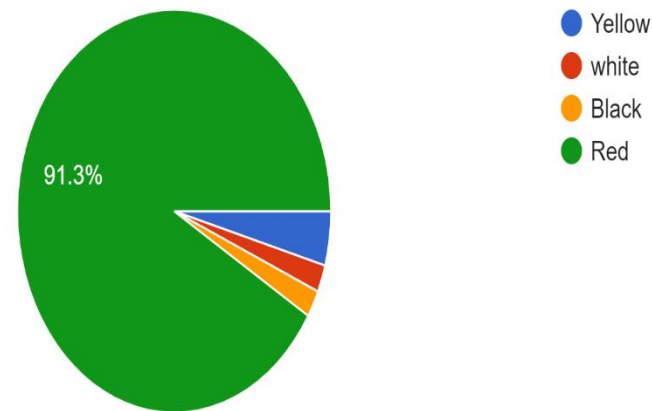
- 10 questions were included for this framework in the questionnaire, and the result was made with the assumption that those who answered 8 or more questions correct have good knowledge and awareness of bio medical waste management.

Graphical Representation of the knowledge and awareness of bio medical waste management among doctors, staff nurses and housekeeping staff.

Question 1

Syringes without needle should be discarded into which color coded bags ?

46 responses

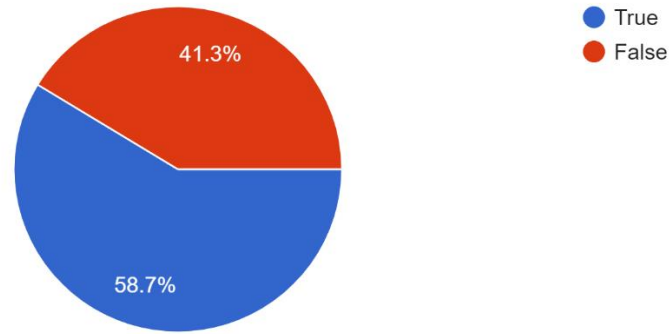


Inference: From the above pie chart, we can infer that 91.3% of hospital staff is aware about the correct way of discarding the syringes and remaining staff has less knowledge and awareness about the same.

Question 2.

Biomedical waste are not infectious

46 responses

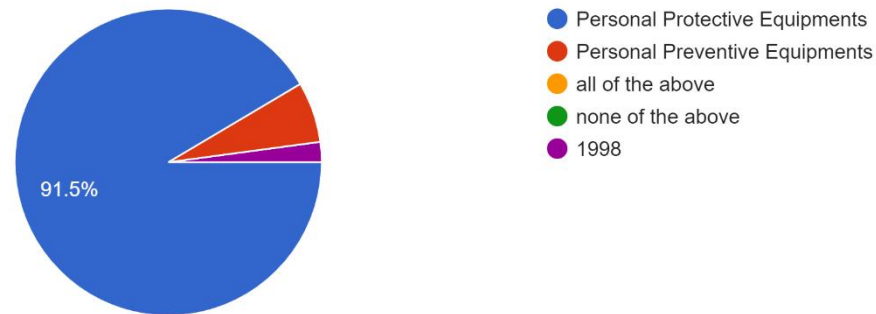


Inference: From the above pie chart, we can infer that 58.7% of the staff has the knowledge that the biomedical waste is infectious and can cause Infections and 41.3% of the staff is less aware.

Question 3.

What does PPE stands for ?

47 responses

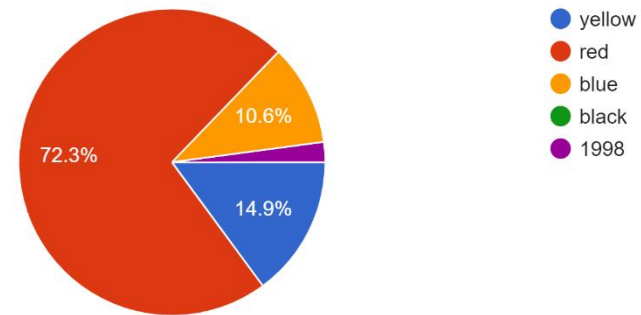


Inference: From the above pie chart, we can infer that major staff i.e., 91.5% are aware about the PPE.

Question 4.

Gloves even the clean one to be disposed off in which color coded bins?

47 responses

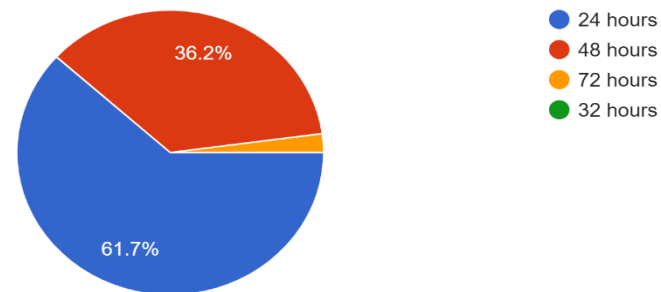


Inference: From the above pie chart, we can infer that 72.3% staff is aware of the correct disposal of gloves and 25.5% are not aware of the same.

Question 5.

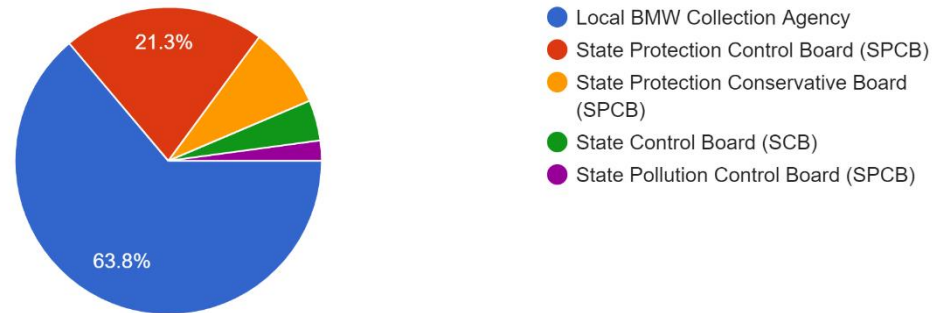
According to biomedical waste (Management and handling) rules, waste should not be stored beyond how many hours?

47 responses



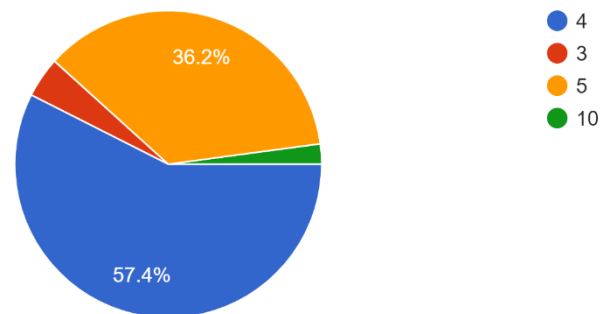
Inference: From the above pie chart, we can infer that about 36.2% of the staff is aware about the biomedical waste storage criteria but remaining is unaware.

Question 6. Who regulates the safe transport of biomedical waste?
47 responses



Inference: From the above pie chart, we can infer that 63.8% staff is aware of safe transport of biomedical waste whereas 36.2% staff have less awareness regarding the same.

Question 7. According to Biomedical Waste (Management and Handling) rules 2016, the waste has been classified in how many categories?
47 responses

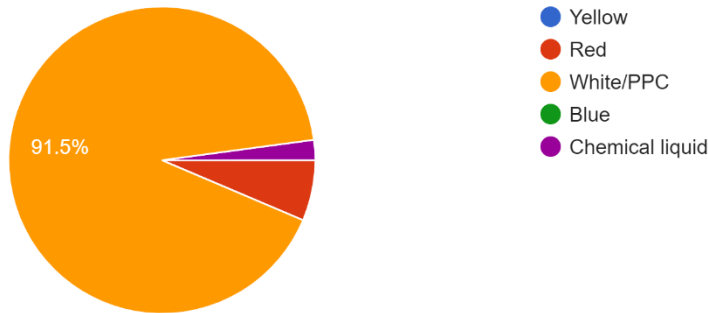


Inference: From the above pie chart, 57.4% staff knows the classification of biomedical waste management whereas 36.2% needs improvement in the level of knowledge.

Question 8.

Needles, syringes with fixed needles, scalpels, blades or any other contaminated sharp objects that may cause puncture and cuts should be disposed off in which color coded bins?

47 responses

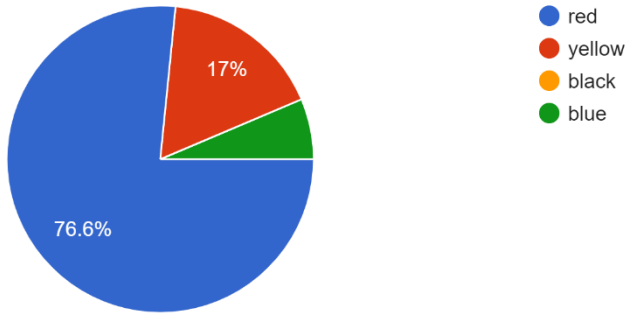


Inference: From the above pie chart, majority of staff is aware.

Question 9.

Gloves, tubing , Catheters are dumped in which color coded bag/containers

47 responses

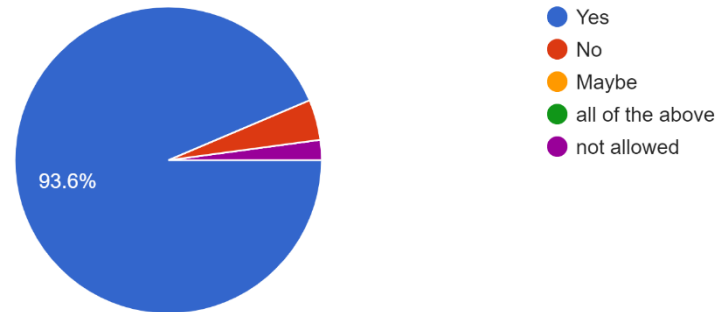


Inference: From the above pie chart, we can infer that majority of the staff is aware of the disposal of gloves, tubing etc., in red color-coded bins.

Question 10.

Do you think it is important to wear protective gears (gloves, masks, gum boots) while handling bio medical waste management?

47 responses



Inference: From the above pie chart, we can infer that most staff know the importance of wearing PPE while handling biomedical waste.

Level of knowledge among doctors, nurses, and housekeeping staff on needle stick injuries: -

5 Questions were included for this framework in the questionnaire, and the result was made with assumption that those who answered 4 or more questions correct have proper knowledge on needle stick injuries.

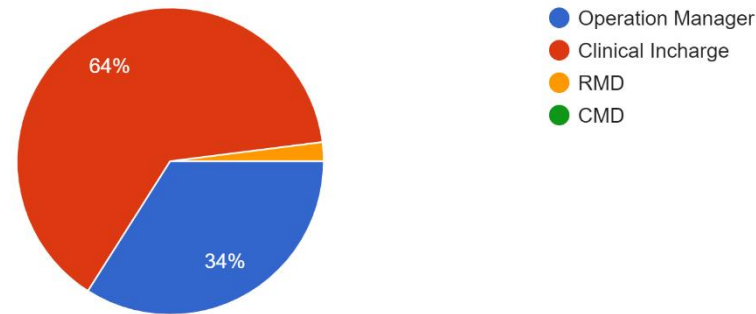
Level of knowledge among doctors, nurses, and housekeeping staff on needle stick injuries: -

5 Questions were included for this framework in the questionnaire, and the result was made with assumption that those who answered 4 or more questions correct have proper knowledge on needle stick injuries.

Graphical Representation of level of knowledge on needle stick injuries among doctors, staff nurses and housekeeping staff.

Question 1.

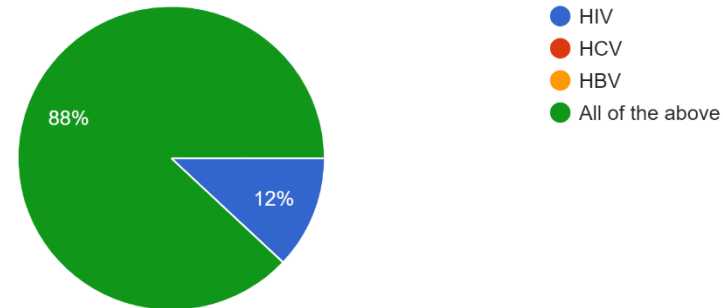
Incase of needle stick injury, you will report to
50 responses



Inference: From the above pie chart, we can infer that 64% of the staff is aware about reporting whom in case of needle stick injury.

Question 2.

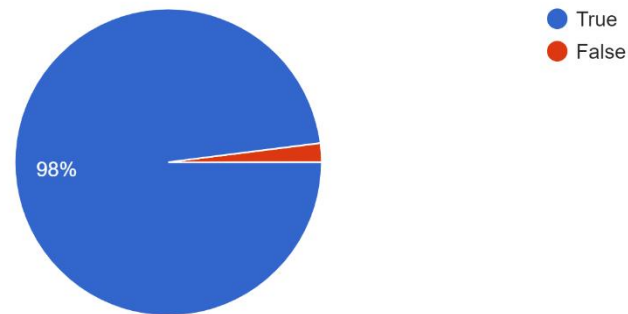
What report/history will you obtain from the patient
50 responses



Inference: From the above pie chart, we can infer that about 88% of the staff is aware about what history is to be taken from the patient in case of needle stick injury

Question 3.

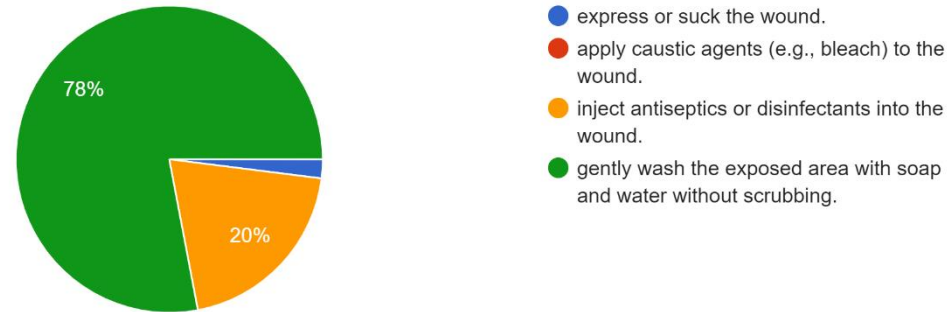
Is needle stick Injury a matter of concern?
50 responses



Inference: From the above pie chart, we can infer that majority of staff knows that needle stick injury is a matter of concern.

Question 4.

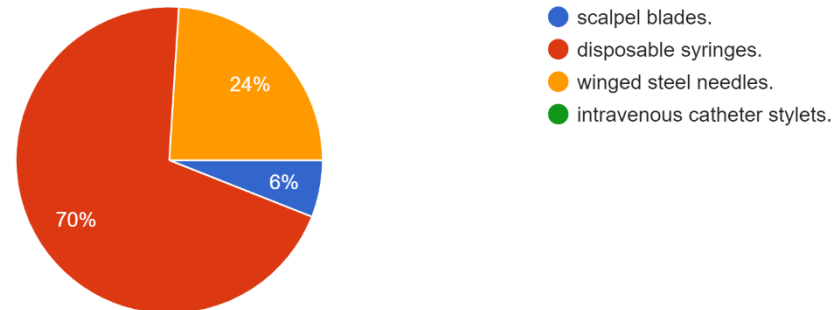
The first step after a needlestick or sharps injury is to
50 responses



Inference: From the above pie chart, we can conclude that 78% of the staff knows about the precautions taken after needle stick injury.

Question 5

The most common devices associated with needlestick/sharps injury are
50 responses



Inference: From the above pie chart, we can conclude that 70% of the staff has the knowledge regarding the most common devices associated with needlestick injury but 30% staff is unaware.

OBSERVATION CHECKLIST

To assess the current practices of biomedical waste management in the hospital –

Maintenance of Records **YES**

Needle Shredders are provided/present in the hospital **YES**

Color Coded containers provided **YES**

Segregation properly done **YES**

Whether bio medical waste regularly lifted by common biomedical waste treatment facility (CBWTF) **YES**

Non-Chlorinated bags used **YES**

Whether Main Storage room is provided with Lock-key **YES**

Bar Code Stickers pasted on color coded bags/containers **YES**

Training to health workers provided and record maintained **YES**

Immunization to health workers provided **Doctors, Staff Nurses, OTAs are provided with immunization but only 6 housekeeping staff are immunized rest are not.**

PPEs used by health workers during handling of BMW **YES**

BMW Committee constituted in the hospital **YES**

Cutting of gloves before disposing into color coded bins **NO**

Major Gaps Observed after the comparison of the assessment of current practices of bio medical waste management and observation checklist

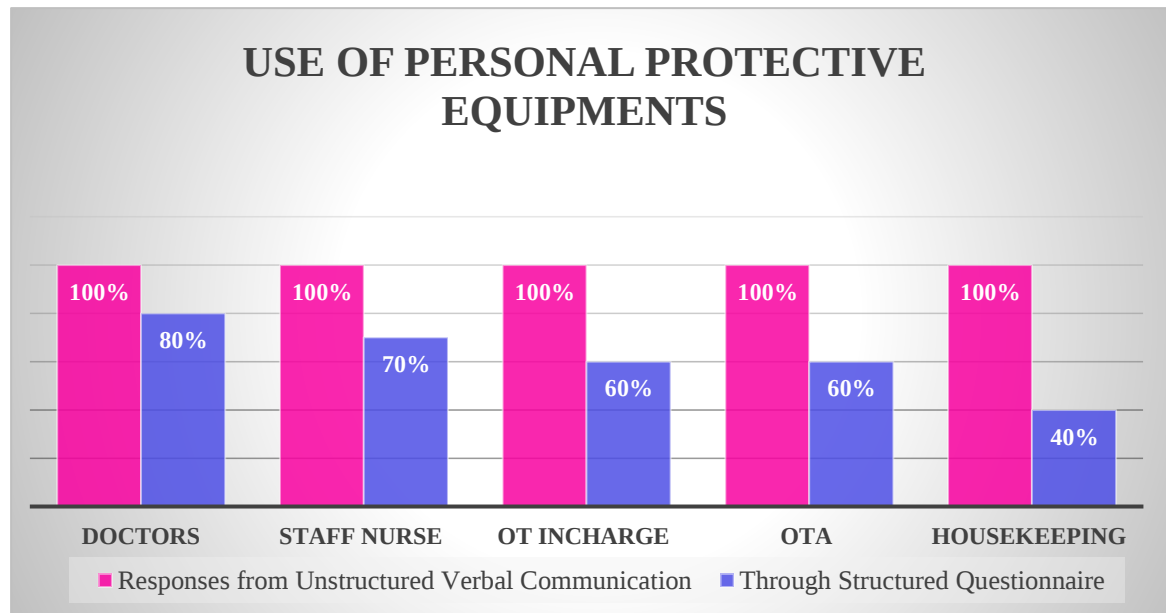
1. The HCF is cutting/shredding syringes to stop its reuse with needle shredder, however in one of the wards it was observed that the needle shredder provided was unable to cut the needles.
2. The center has not adopted the practice of cutting of gloves and glucose bottles before dispensing in the color-coded bins.
3. Periodic Trainings must be provided to the staff for better knowledge and awareness regarding biomedical waste management and needle stick injuries.

Assessment of Infection Control Practices among Doctors, Staff Nurses, Operation Theater In charge, Operation Theater Assistants and Housekeeping

A questionnaire with 5 questions and observational checklist was made for the comparison.

Total No. of Respondents: 45 staff members including 12 Doctors, 21 Paramedical Staff consisting of OT In charge, OTA, and Staff Nurse & 12 Housekeeping Staff.

- Use of Personal Protective Equipment**

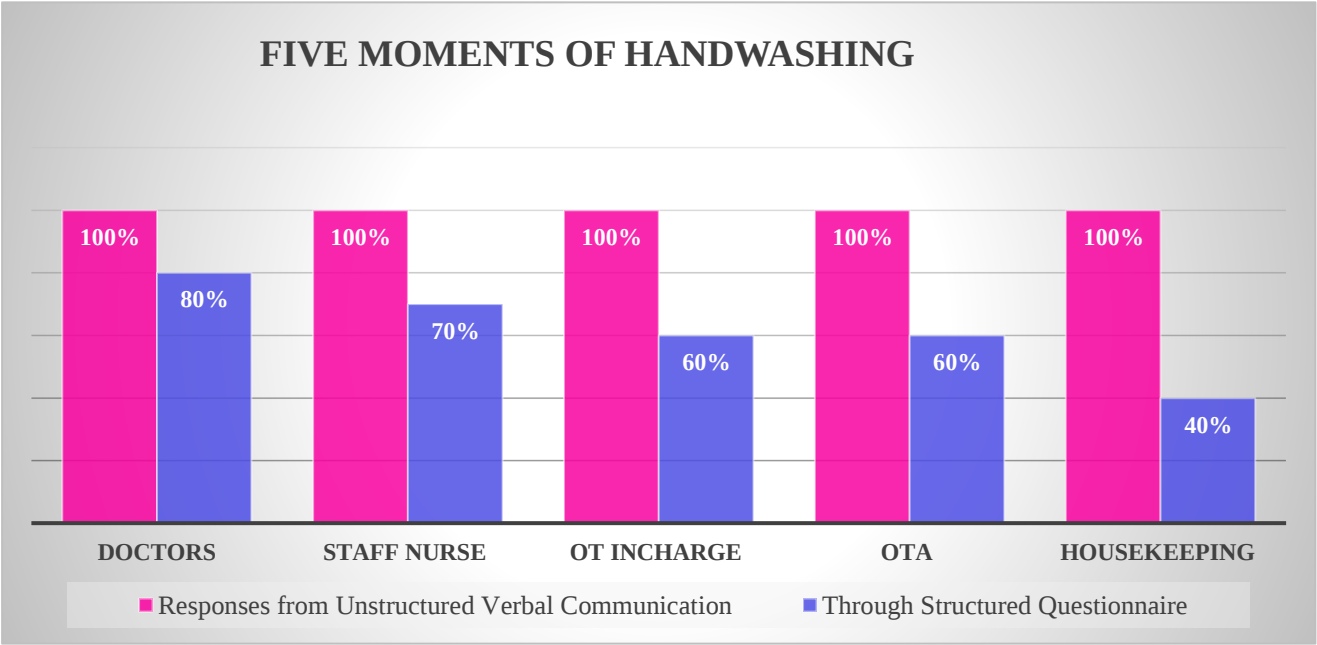


After collecting the data, results showed-

When the staff was asked that is personal protective equipment important to be used, 100% doctors, 100% Staff nurse, 100% Operation Theater In charge, 100% OTA's answered it as yes and 80% of housekeeping staff answered it as yes. But on observation for the use of personal protective equipment the result was as follows: -

80% of doctors, 80% of staff nurse, 90% of OT In charge, 90% OTA's and 50% of housekeeping staff were using personal protective equipment

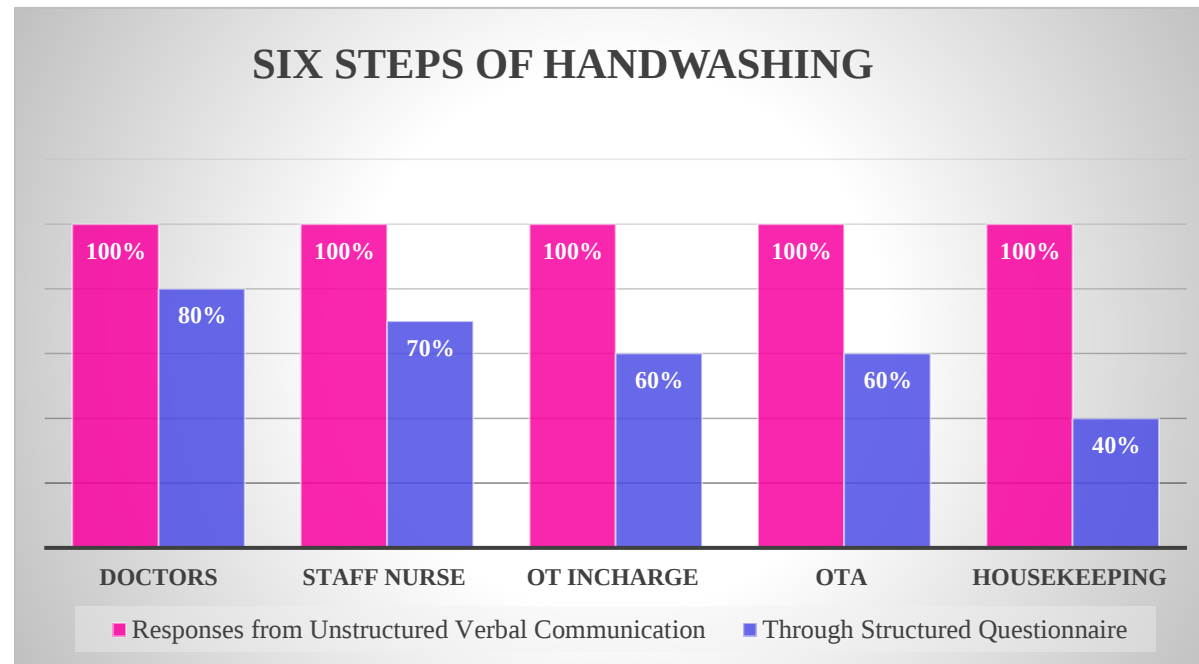
5 Moments of Handwashing



When the staff was asked that do they follow 5 moments of handwashing, 100% doctors, 100% of staff nurses, 80% OT In charge, 80% of OTA’s and 50% of housekeeping staff answered yes.

But on observation- 70% of doctors, 60% of staff nurse, 70% of OT In charge , 60% of OTA and 20% of housekeeping were actually following it.

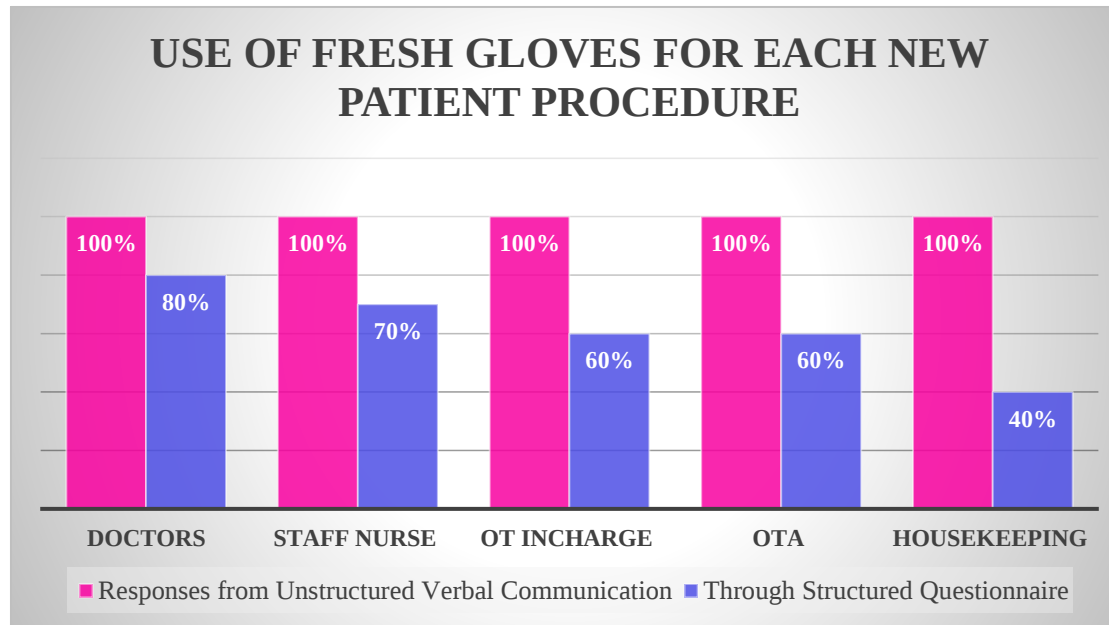
- **Six Steps of Handwashing**



When the staff was asked that do they follow six steps of handwashing, 100% doctors, 100% of staff nurse, 80% of OT In charge, 80% of OTA and 50% of housekeeping answered yes.

But on observation- 70% of doctors, 60% of staff nurses, 70% of OT In charge, 60% of OTA and 20% of housekeeping staff were following it.

- **Use of Fresh Gloves for each new patient procedure**



When the staff was asked that it is important to use fresh gloves before every new patient procedure, 100% of doctors, 100% of staff nurses, 100% of OT In charge, 100% of OTA and 100% housekeeping staff answered yes.

But on observation- 80% of doctors, 70% of staff nurses, 60% of OT In charge, 60% of OTA and 40% of housekeeping staff were following it.

CONCLUSION

1. A hospital-based study was conducted among healthcare providers including Doctors, Staff Nurse, OT In charge, OTA & Housekeeping Staff.
2. Nearly about all the participants have heard about Biomedical waste management and infection control measures. But there is lack of proper and complete knowledge about bio medical waste management practices.
3. Majority staff have better knowledge and awareness than housekeeping staff regarding biomedical waste management practices.
4. Regarding practices related to BMW management, Housekeeping are ignorant on many counts especially in regard to needle stick injuries.
5. After the assessment of infection control practices, it was observed that doctors, staff nurses, and other health professionals were aware of all the infection control measures but on observation a smaller number of staff were practicing them.
6. On comparing the observation checklist and assessment of practices, it was analyzed that the gloves were not being cut before disposal.

RECOMMENDATIONS

- The need for comprehensive training programs about BMW management including-segregation, in-house transportation, storage of waste in color bins and final disposal for treatment, etc., for all hospital staff is highly recommended.
- Biomedical waste (management and handling) rules should be implemented strictly. Establish proper supervision on following protocols, guidelines regarding BMWM in each facility and Regular monitoring is required at all levels specially for the housekeeping staff.
- Enhancement should be done to the already existing infection control committee to supervise all the aspects of biomedical waste management.
- Ensure the availability of necessary resources i.e., trolley, color-coded bins and bags, display of charts, etc. Further, proper system for the indenting and procurement of necessary materials for BMWM should be established.
- Periodic training on implementation of bio medical waste management and handling rules 2019.
- All, the health-care personnel should be vaccinated against Tetanus and Hepatitis-B, especially waste handlers and sanitary workers.

