

Study on the Bio-Medical Waste Management Process in a
District Hospital, Fatehgarh Sahib, Punjab

By

Sagrika Singh

*Dissertation submitted for the partial fulfillment of the
MBA Hospital and Health Management*

Academic year, 2016-2018



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TO WHOMSOEVER MAY CONCERN

This is to certify that **Sagrika Singh** student of MBA Hospital and Health Management from The IIHMR University, Jaipur has undergone internship training at Punjab Health Systems Corporation, District Hospital, Fatehgarhsahib, Punjab from 1st February 2018 to 30th April 2018.

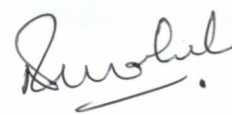
She has successfully carried out the study designated to her during internship training and her approach to the study has been sincere, scientific, and analytical.

The Internship is in fulfillment of the course requirements.

I wish her all success in all her future endeavors.



Col. (Dr.) Ashok Kaushik
Dean, Academics and Student Affairs
The IIHMR University, Jaipur



Dr. Neetu Purohit
Assistant Professor
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Dated 1.5.18

TO WHOM IT MAY CONCERN **CERTIFICATE OF DISSERTATION COMPLETION**

This is to certify that Ms. Sagrika Singh student of MBA in Hospital and Health Management, IIHMR Jaipur has successfully completed three months dissertation in health facility as allotted under Punjab Health Systems Corporation, Punjab from 01.02.2018 to 30.04.2018.

During the dissertation the student's performance was satisfactory.

We wish her success in all her future endeavors.

(Varun Roojam) I.A.S.

Managing Director

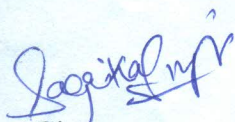
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CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled "**A Study on the Bio-Medical Management Process in a District Hospital, Fatehgarhsahib, Punjab.**" and submitted by **Sagrika Singh, MBA-HM(21); 0485** under the supervision of Dr. Neetu Purohit for award of MBA in Hospital and Health Management in Health and Hospitals of the University carried out during the period from 1st February 2018 to 30th April 2018 embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other institute or other similar institution of higher learning.


Signature

ABSTRACT

Title: A STUDY ON THE BIO-MEDICAL WASTE MANAGEMENT PROCESS
IN A DISTRICT HOSPITAL, FATEHGARH SAHIB , PUNJAB

Author: Sagrika Singh

BACKGROUND:

Biomedical waste management has recently emerged as an issue of major concern not only to hospitals, nursing home authorities but also to the environment. the bio-medical wastes generated from health care units depend upon many factors such as waste management methods, type of health care units, occupancy of healthcare units, specialization of healthcare units, ratio of reusable items in use, availability of infrastructure and resources etc.

RESEARCH QUESTION:

- What bio-medical waste management system is existing in the hospital?
- What is the level of knowledge about the BMW among the housekeeping staff and nursing staff of the hospital?

OBJECTIVES:

- To assess the level of knowledge and practice of the staff about the bio-medical waste management system
- To know about the practices followed by the hospital regarding the handling of the bio-medical waste

METHODOLOGY:

A **cross-sectional approach** was adopted to conduct the study at Fatehgarh Sahib district hospital. The Study Area is District hospital in Fatehgarh Sahib. The Study duration is 3 months. The Study design is Situational analysis of the hospital. The Study Population is nurses and sanitation staff for assessing the knowledge and practices.

The Data collection is based on the present status of the available collection of data on the status of handling the waste. Collection of data on the method of the transportation of the waste. The Data collected is Primary data collected in the form of questionnaire, feedback, review of various activities. The Secondary data is in the form of literature review.

RESULT

The Knowledge & Practice analysis of the housekeeping staff was found to 80% and 56% respectively.

The Knowledge & Practice analysis of the nursing staff was found to 90% and 42% respectively.

RECOMMENDATIONS:

There are no lags in the process flow for biomedical waste management process; to make it more compliant with the rules, the housekeeping staff should be wearing PPEs, which was lacking in the observations. Since, the analysis shows a lower percentage in practices for both the housekeeping and nursing staff, the hospital can formulate a team for auditing compliances, which would be responsible for entire supervision of all practices under BMW Management.

It was observed from the questionnaire results that the staff were not happy with the training process, that takes place in Mohali, because of which they were unable to attend these similar sessions.

Acknowledgement

I take this opportunity to extend my thanks to Fatehgarh Sahib Civil hospital for allowing me to do this dissertation project in their organization.

With pleasure and deep sense of gratitude, I express my heartfelt thanks and indebtedness to my respected supervisor **Dr. Sandeep Singh Gill**, Nodal Officer at Fatehgarh Sahib Civil hospital for providing excellent guidance and encouragement throughout the journey. He was always available when I needed his guidance. I thank him for providing me the privilege of working under his expert supervision. His simplicity and integrity shall always be the lighthouse and motivation to guide me through the journey of life.

I owe my sincere gratitude to **Mrs. Harmeet Kaur**, nursing incharge who has always been my support in all my work during the project. Without her help and guidance completion of this project would have been impossible.

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I would also like to thank my faculty at IIHMR- Jaipur and especially my Mentor- **Dr. Neetu Purohit** (Associate Professor) for guiding me all through the dissertation project.

A special thanks to my colleagues, for providing immense support and motivation throughout the entire period.

Last but not the least I am forever grateful to my parents, family and friends for their blessings, their unwavering faith in me and being an endless source of support and inspiration.

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Acronyms/Abbreviations

- BMW- Bio-Medical Waste
- BMWM- Bio-Medical Waste Management
- DH- District Hospital
- NABL- National Accreditation Board for Testing & Calibration Laboratories
- NDCP- National Disease Control Programme
- WHO- World Health Organization
- CPCB-Central pollution control board
- CTF-common treatment facility
- HCF-health care facility
- HCW-health care worker
- HCV-hepatitis-c virus
- HIV-human immunodeficiency virus
- IPD-in-patient department
- OPD-out-patient department
- STP-sewage treatment plant
- PPU-post partum unit
- BBU-blood bank unit

1.INTRODUCTION

Biomedical waste management has recently emerged as an issue of major concern not only to hospitals, nursing home authorities but also to the environment. the bio-medical wastes generated from health care units depend upon many factors such as waste management methods, type of health care units, occupancy of healthcare units, specialization of healthcare units, ratio of reusable items in use, availability of infrastructure and resources etc.

The proper management of biomedical waste has become a worldwide humanitarian topic today. Although hazards of poor management of biomedical waste have aroused the concern world over, especially in the light of its far-reaching effects on human, health and the environment.

Now it is a well-established fact that there are many adverse and harmful effects to the environment including human beings which are caused by the “Hospital waste” generated during the patient care. Hospital waste is a potential health hazard to the health care workers, public and flora and fauna of the area. The problems of the waste disposal in the hospitals and other health-care institutions have become issues of increasing concern.

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. Existing and proposed systems of health-care waste management are described. A waste-management plan for health-care establishments is also proposed, which includes institutional arrangements, appropriate technologies, operational plans, financial management and the drawing up of appropriate staff training programs. According to **Biomedical Waste (Management and Handling) Rules, 1998** of India “Any waste which is generated during the diagnosis, treatment or immunization of human beings or animals or in research activities pertaining thereto or in the production or testing of biologicals.

The Government of India (notification, 1998) specifies that Hospital Waste Management is a part of hospital hygiene and maintenance activities. This involves management of range of activities, which are mainly engineering functions, such as collection, transportation, operation or treatment of processing systems, and disposal of wastes.

One of India's major achievements has been to change the attitudes of the operators of health care facilities to incorporate good HCW management practices in their daily operations and to purchase on-site waste management services from the private sector

World Health Organization states that 85% of hospital wastes are actually non-hazardous, whereas 10% are infectious and 5% are non-infectious but they are included in hazardous wastes. About 15% to 35% of Hospital waste is regulated as infectious waste. This range is dependent on the total amount of waste generated

Classification of Bio-Medical Waste

The World Health Organization (WHO) has classified medical waste into eight categories:

- ' General Waste
- ' Pathological
- ' Radioactive
- ' Chemical
- ' Infectious to potentially infectious waste
- ' Sharps
- ' Pharmaceuticals
- ' Pressurized containers

Management

Biomedical waste must be properly managed and disposed of to protect the environment, general public and workers, especially healthcare and sanitation workers who are at risk of exposure to biomedical waste as an occupational hazard. Steps in the management of biomedical waste include generation, accumulation, handling, storage, treatment, transport and disposal.

Disposal occurs off-site, at a location that is different from the site of generation. Treatment may occur on-site or off-site. On-site treatment of large quantities of biomedical waste usually requires the use of relatively expensive equipment, and is generally only cost effective for very large hospitals and major universities who have the space, labor and budget to operate such equipment. Off-site treatment and disposal involves hiring of a biomedical waste disposal service (also called a truck service) whose employees are trained to collect and haul away biomedical waste in special containers (usually cardboard boxes, or reusable plastic bins) for treatment at a facility designed to handle biomedical waste.

Generation and accumulation

Biomedical waste should be collected in containers that are leak-proof and sufficiently strong to prevent breakage during handling. Containers of biomedical waste are marked with a biohazard symbol. The container, marking, and labels are often red.

Discarded sharps are usually collected in specialized boxes, often called *needle boxes*.

Storage

“Storage refers to keeping the waste until it is treated on-site or transported off-site for treatment or disposal. There are many options and containers for storage. Regulatory agencies may limit the time waste can remain in storage. Handling is the act of moving biomedical waste between the point of generation, accumulation areas, storage locations and on-site treatment facilities. Workers who handle biomedical waste must observe *standard precautions*.”

Treatment

The goals of biomedical waste treatment are to reduce or eliminate the waste's hazards, and usually to make the waste unrecognizable. Treatment should render the waste safe for subsequent handling and disposal. There are several treatment methods that can accomplish these goals.

“Biomedical waste is often incinerated. An efficient incinerator will destroy pathogens and sharps. Source materials are not recognizable in the resulting ash.”

An autoclave may also be used to treat biomedical waste. An autoclave uses steam and pressure to sterilize the waste or reduce its microbiological load to a level at which it may be safely disposed of. Many healthcare facilities routinely use an autoclave to sterilize medical supplies. If the same autoclave is used to sterilize supplies and treat biomedical waste, administrative controls must be used to prevent the waste operations from contaminating the supplies. Effective administrative controls include operator training, strict procedures, and separate times and space for processing biomedical waste.

Microwave disinfection can also be employed for treatment of Biomedical wastes. Microwave irradiation is a type of non-contact heating technologies for disinfection. Microwave chemistry is based on efficient heating of materials by microwave dielectric heating effects. When exposed to microwave frequencies, the dipoles of the water molecules present in cells re-align with the applied electric field. As the field oscillates, the dipoles attempts to realign itself with the alternating electric field and in this process, energy is lost in the form of heat through molecular friction and dielectric loss. Microwave disinfection is a recently developed technology which provides advantage over old existing technologies of autoclaves as microwave based disinfection has less cycle time, power consumption and it requires minimal usage of water and consumables as compared to autoclaves.

For liquids and small quantities, a 1–10% solution of bleach can be used to disinfect biomedical waste. Solutions of sodium hydroxide and other chemical disinfectants may also be used, depending on the waste's characteristics. Other treatment methods include heat, alkaline digesters and the use of microwaves.

For autoclaves and microwave systems, a shredder may be used as a final treatment step to render the waste unrecognizable.

2. LITERATURE REVIEW

Health-care waste management in India is receiving greater attention due to recent regulations (the Biomedical Wastes (Management & Handling) Rules, 1998). The prevailing situation is analyzed covering various issues like quantities and proportion of different constituents of wastes, handling, treatment and disposal methods in various

health-care units (HCUs). The waste generation rate ranges between 0.5 and 2.0 kg bed⁻¹day⁻¹. It is estimated that annually about 0.33 million tons of waste are generated in India.

The solid waste from the hospitals consists of bandages, linen and other infectious waste (30–35%), plastics (7–10%), disposable syringes (0.3–0.5%), glass (3–5%) and other general wastes including food (40–45%).

In general, the wastes are collected in a mixed form, transported and disposed of along with municipal solid wastes. At many places, authorities are failing to install appropriate systems for a variety of reasons, such as non-availability of appropriate technologies, inadequate financial resources and absence of professional training on waste management.

Hazards associated with health-care waste management and shortcomings in the existing system are identified. Many synonyms to medical waste exist and they are currently used interchangeably in different parts of the world and in different scientific journals

The generation of these wastes is an ongoing phenomenon as long as human civilization persists. Hospital waste is sub-divided into health care general waste (HCGW) and health care risk waste (HCRW)

The health system is under pressure to dispose of health care waste in such a way as to avoid unnecessarily high levels of environmental degradation. The aim of health care facilities worldwide is beginning to subscribe to the social goals of a cleaner and safer environment.

To manage health care waste optimally, health care providers should consider all stages or whole life cycle of the medical product by looking at the medical product's upstream and down-stream activities (Kaiser et al. 2001). Determining which portion or components of clinical waste is infectious is challenged by its inherent heterogeneous nature and definitional problems (OTA, 1988).

3. RATIONALE

A major issue related to current Bio-Medical waste management in many hospitals is that the implementation of Bio-Waste regulation is unsatisfactory as some hospitals are disposing of waste in a haphazard, improper, and indiscriminate manner. Lack of segregation practices, results in mixing of hospital wastes with general waste making the

whole waste stream hazardous. Inappropriate segregation ultimately results in an incorrect method of waste disposal.

The problem of bio-medical waste disposal in the hospitals and other healthcare establishments has become an issue of increasing concern, prompting hospital administration to seek new ways of scientific, safe, and cost-effective management of the waste, and keeping their personnel informed about the advances in this area. The need of proper hospital waste management system is of prime importance and is an essential component of quality assurance in hospitals.

4. RESEARCH QUESTION

- What bio-medical waste management system is existing in the hospital?
- What is the level of knowledge about the BMW among the housekeeping staff and nursing staff of the hospital?

5. OBJECTIVE

- To find out the present level of awareness and knowledge of the staff about the bio-medical waste management system.
- To assess the practices followed by the hospital regarding the handling of the bio-medical waste.

6. METHODOLOGY

The principle aim of this research is to describe the nature of the situation as it exists at the time of study and to explore the causes of the phenomenon. The system approach was taken in this study.

Input in various forms were seen, processed were understood and thereafter the output were analyzed to find the key findings and recommendations.

Ethical clearance

Ethical clearance and permission to collect the information from various departments and personnel was taken from the senior medical officer.

Study design

The most encompassing and expensive way of undertaking this study is through the descriptive research . it is the most common and widely used method in gathering data regarding the attitude and opinions of groups of people by asking them to provide you with important information by means of questionnaire. Second direct means of acquiring data is by observation .observation has been categorized into three types:activity analysis, product analysis, and situational analysis. Third method to be used by the means of devices.

Steps followed to put in practice the design:

- First of all a general visit to all the departments in the hospital was made.
- On subsequent visit to these departments various observation about the bio-medical waste management in the hospital were noticed.
- The observation were made about the process of BMW, all the steps of hospital followed and the practice of the hospital staff.
- When theses observation were made, instruments were selected to get further data on bio-medical records.
- After the observation were made about the running practice of BMW management in the hospital, a questionnaire was prepared to assess the awareness' of the staff regarding the BMW management.
- The questionnaire was admitted to the staff and the information were collected and analyzed.

Study area

The study area was a civil hospital of Fatehgarh Sahib in Punjab. The study was conducted between February 2018 to April 2018. The full 100 bedded hospital was covered during the study that includes the departments; emergency, labor room,post-partum unit, blood-bank unit,O.T,OPD,IPD,pharmacy, laboratory ,radiology ,dialysis,T.Bcente,nashamukti Kendra.

Each area was visited 3 non-consecutive days in the study period. No visit was made on Sundays and public holidays. Areas were visit during the morning hour between 9am-11am and evening hour of the same day at 2pm-3pm(hospital timing:-9am-3pm).

Framework

Data recorded covering various aspect of BMW management at the source of generation of wastewas:

- Primarily: 4 Broad functions are carried out at source viz. placement of 4 colour coded bins, i.e., yellow,red, blue,white which are lined on inner side by similar colored waste bags.
- Segregation of waste in such waste bags i.e., general waste in green dustbin, soiled waste in yellow, recyclable waste in red, sharps in white and glass wares in blue.
- Mutilation of recyclable waste like disposables syringes,plastic bottles, needles.
- Correct sealing and labeling of the waste bags
- Proper storage of these waste in the department before central collection.
- Proper and safe transportation of the waste from the centre collection to the storage area.
- Weighing and transferring of the waste from centre collection to the store room
- Timely lifting of the waste by the contract vehicle and route out to the treatment facility in Mohali.

Data type

Data collection is a term used to describe the process of preparing and collecting data is the basic input for any decision making process. In this study, two types of data were collected and analyzed:

- **Primary date:-** data which are collected from the field under the control and supervision of the invigilator. In this case, questionnaire and verbal interview were the major means of collecting data.
- **Secondary data:-** records made by already existing records gathered by someone else maybe in context of some other requirements is called secondary data. In this case, existing registers and records available in the housekeeping department, internet and books on the subject were referred to.

Sample size

Sample size choosing is the act of choosing the number of observation and replicates to include in a statistical sample. The sample size is an important feature of any empirical study in which the goal is to make inferences about a population from a sample. In this case, 45 nursing staff and 11 housekeeping staff was used to carry the study.

Instruments

Records about the bio-medical generated in the hospital were collected from the record register maintained by the nursing in-charge in the hospital.

The observation about the practices of BMW management were made during the study, in various wards in the hospital. The staff was continually asked for their suggestions regarding general cleanliness, BMW management and any records that might be required for the process. The questionnaire was administered to the available staff by providing the questionnaire to the care-takers who in turn administered to the nurses and housekeeping staff.

Method

The data to be collected was of the primary and secondary nature. The method applied for collecting the primary data were:

- **Observation method:** OB method was used to collect the primary data.
- **Interview method:** the process involved oral-verbal stimuli and reply in terms of oral-verbal responses. Time required for the process was less and the data analysis becomes easier. Personal information can be easily obtained. While asking the questions, structured and previously framed questions were asked.

The secondary data is collected through academic pursuit of books, magazines, official websites and Google. However, reliability, suitability and accuracy of the data must be kept in mind.

Data management

Data management consist of data collection in a systematic and consistent manner, data storage in order to reconstruct the subject under similar conditions, data protection for its integrity and loss, data retention for a specified time, data analysis in which raw data is chosen evaluated and interpreted into meaningful information. it also include data sharing and data reporting with others. The data was stored electronically by means of notes, graphs and pictures.

Analysis plan

Data collected was based on hypothetical questions which were designed to ne interpretive, leading and with multiple choices. The aim was to move from the qualitative data that had been collected into some form of explanation ,understanding or interpretation of the people and satiation we were investigating. The model taken into practice was the one shown below.

7. RESULT

After the literature review was carried out and the methodology devised, the hospital department visits were conducted. The observation were taken and recorded in questionnaire form and visit findings .certain pictures were also taken to re-emphasize on the observation.the same were then analyzed to come out with various findings on the subject study.

Data analysis

The data collected was converted from the questionnaire to bar graphs through micro-soft excel sheets. Certain data was stored and analyzed in a tabular form. Also, the environment fot the moment was captured through camera and pictures were used to emphasize on certain points. The observation during the visit to various department of the hospital were analyzed and compared with the existing rules and regulation as per BMW rules. Also, critical aspects of patient safety, staff safety, aesthetic look of the hospital and better management issues were kept in mind. After the detailed analysis of te collected information, the same was interpolated to:

- General findings
- Critical findings

○

General findings

The general findings are enumerated below with some pictures to emphasize the issues.

BMW TERMINAL IN THE HOSPITAL

Terminal 1:-	Blood bank, Emergency(ground floor)
Terminal 2:-	OPD, injection room ARB, dressing room, dental room, dermatology room(ground floor)
Terminal 3:-	Laboratory, dialysis, micro labs (first floor)
Terminal 4:-	Wards, OT(FIRST FLOOR AND SECOND FLOOR)
Terminal 5:-	Labour room, NBSU, Post-partum unit(ground floor)
Terminal 6:-	Nasha-mukti Kendra, T.B centre (outside the hospital)

<u>DEPARTMENTS</u>	<u>YELLOW</u>	<u>RED</u>	<u>BLUE</u>	<u>WHITE</u>	<u>GREEN</u>
<u>EMERGENCY</u>	YES	YES	YES	YES	YES
<u>OPD</u>	NO	NO	NO	NO	YES
<u>LABOUR ROOM</u>	YES	YES	YES	YES	YES
<u>MATERNITY</u> <u>WARD</u>	YES	YES	NO	NO	YES
<u>OT</u>	YES	YES	YES	YES	YES

<u>POST PARTUM UNIT</u>	YES	YES	NO	NO	YES
<u>IPD</u>	YES	YES	NO	NO	YES
<u>LABORATORY</u>	YES	YES	NO	YES	YES
<u>RADIOLOGY</u>	NO	NO	NO	NO	YES
<u>BLOOD BANK</u>	YES	YES	NO	NO	YES

Table 1.1 (Availability of the BMW dustbins in the department)

7.1 PROCESS FLOW

Segregation

It was observed that segregation practice was followed satisfactorily. Departments has four color bins except for few, unavailability of the blue dustbin and the use of cardboard boxes covered by blue tape was observed I many departments. Needle discarders are also not available in the blood bank unit and they are using plastic box to keep the needles.

There was also unavailability of different color bags for the collection of the waste, so same color bags were used sometime although waste were not at all mixed.



Collection

Collection was done at 2pm from every department by the housekeeping staff. The hospital does not have any trolley system, the housekeeping staff collect the waste in different color bags and put them in a container and carry the container all the way to the store room.



Storage

The store room for the collection of the BMW was situated outside the hospital within its premises, although the room was small but the waste were kept separately with demarcated area. Although store room was not so clean and foul smell was observed during the visit.



Transportation

There were no such assigned duties of the staff for each department, the staff just carried out the waste according to day wise and transport the collected waste to the store room.

From the store room the waste was carried out by the rainbow company at 4:30 pm everyday under the guidance of the nodal office of BMW and the nursing in charge.



7.2 Knowledge and Practice analysis

Questionnaire was prepared and was conducted verbally to the staff in the local language.

Total housekeeping staff: 11

Total nursing staff: 45

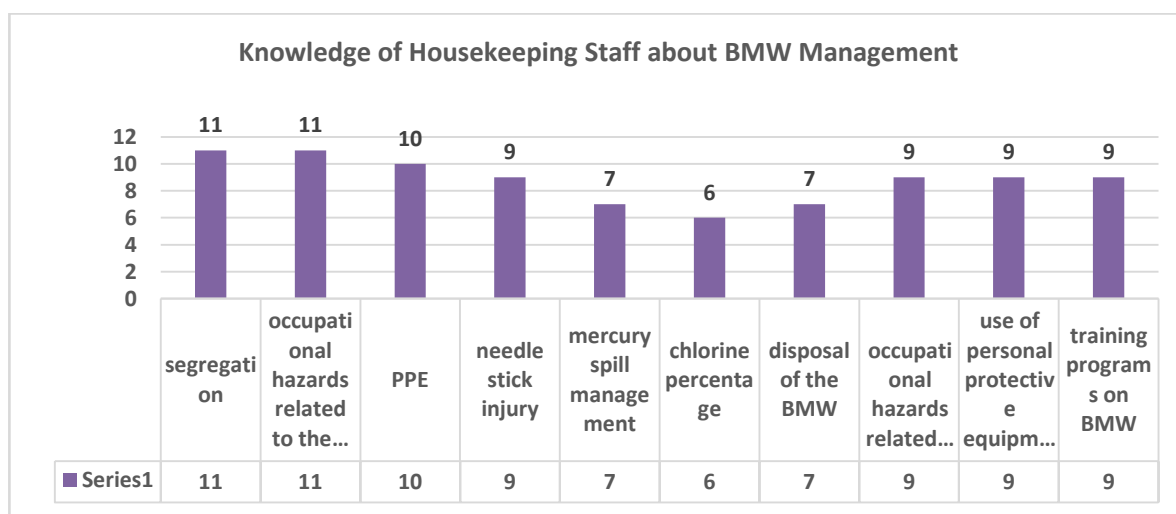


Figure 1: Knowledge among the housekeeping staff

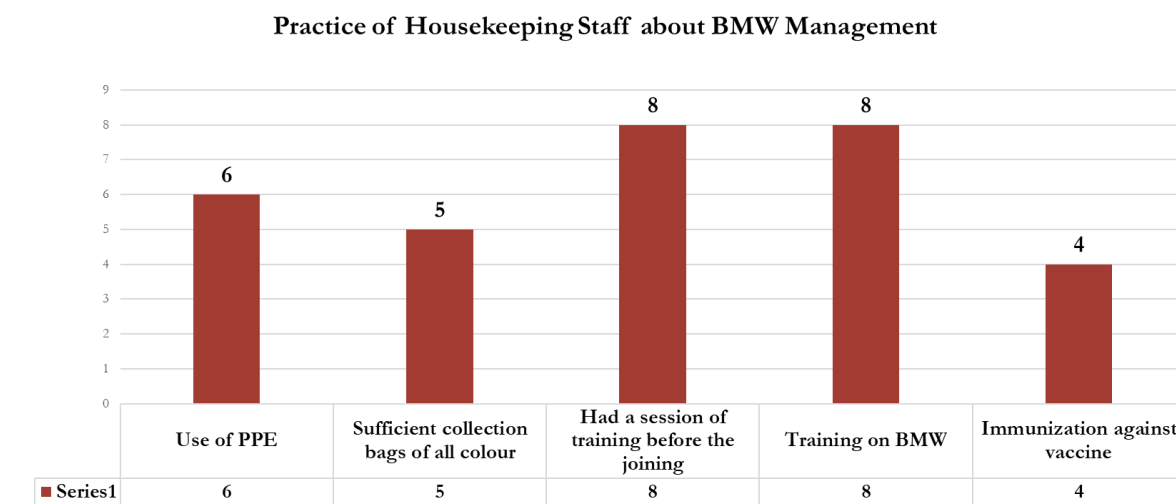


Figure 2: Practice among the housekeeping staff

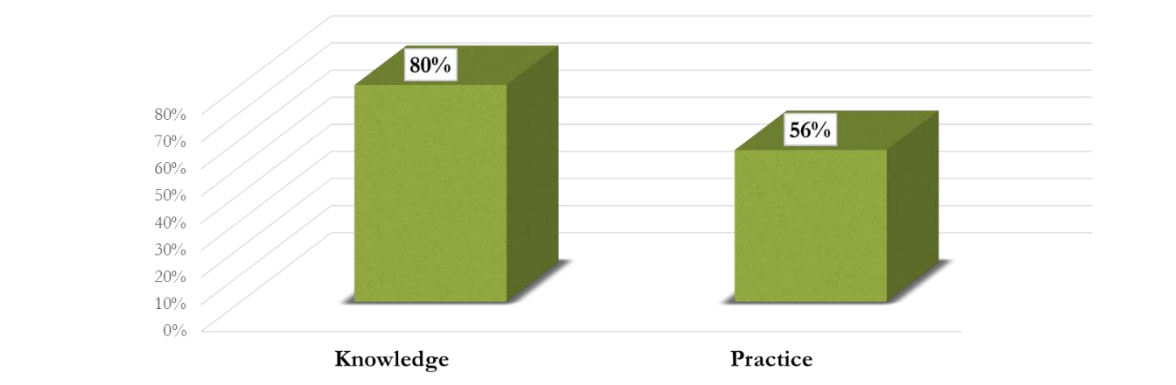


Figure 3: Knowledge & Practice analysis of housekeeping staff

The housekeeping staff score 80% in knowledge which is a good indicator that shows the staff has a good knowledge regarding the bio-medical waste management.

Somehow, they score less in practice just 56% as they were lagging behind following the proper precautions needed in the BMW management.

The reason for less score in the practice is that the hospital is not providing sufficient PPE to all the staff due to which they have to sacrifice with their protection.

Like sufficient gloves were not provided so they have to share them with their colleagues also they do not have proper mask to cover their face so they have to cover them with their own dupatta or handkerchief sometimes.

Also the proper different color carry bags were also not provided by the government, so they have to carry the waste in same color bags although different bags, but this can be dangerous during the transportation process.

KNOWLEDGE & PRACTICE ANALYSIS OF THE NURSING STAFF

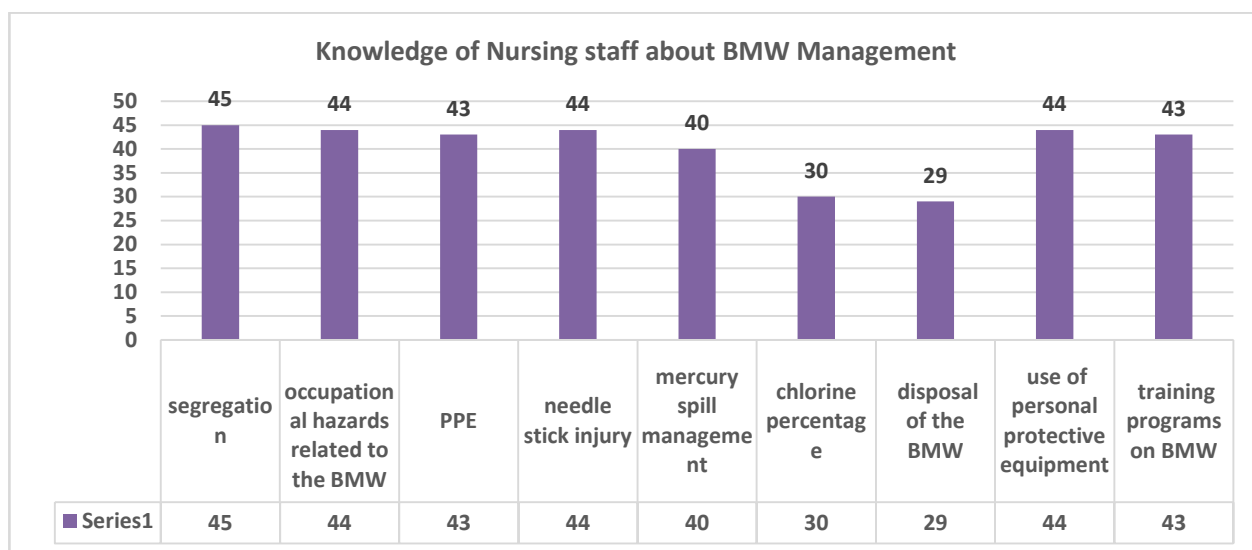


Figure 4: Knowledge among the nursing staff

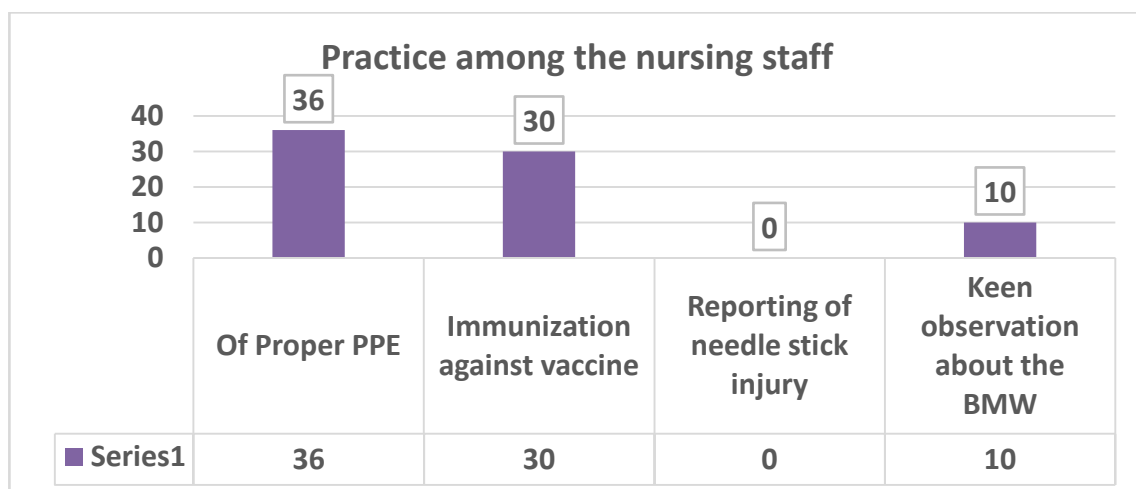


Figure 5: Practice among the nursing staff

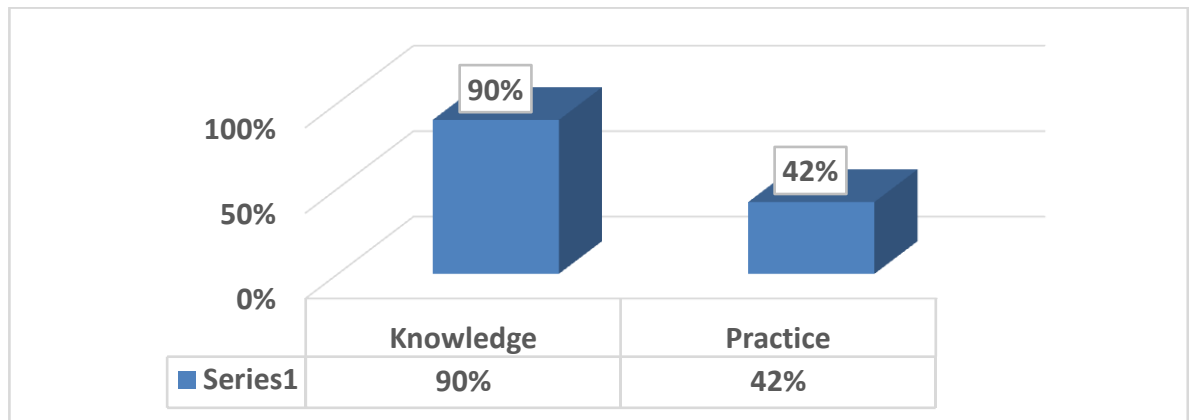


Figure 8: Knowledge & Practice analysis of the nursing staff

The nursing staff score 90% in knowledge as they were much more aware than the housekeeping staff.

But they score 42% in practice which is much lower in comparison with the housekeeping staff.

The reason is again from the government side as many department do not have needle discarder and they were using plastic boxes to discard the needles.

Also due to no BMW management team the nurses were not aware about the general knowledge about the waste collection as only the nursing in-charge is involved in maintaining the registers.

8. RECOMMENDATION

There are no lags in the process flow for biomedical waste management process; to make it more compliant with the rules, the housekeeping staff should be wearing PPEs, which was lacking in the observations. Since, the analysis shows a lower percentage in practices for both the housekeeping and nursing staff, the hospital can formulate a team for auditing compliances, which would be responsible for entire supervision of all practices under BMW Management.

It was observed from the questionnaire results that the staff were not happy with the training process, that takes place in Mohali, because of which they were unable to attend these similar sessions.

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ANNEXURE

NURSING STAFF		
Sl. No	(A) KNOWLEDGE QUESTIONS	Response- Yes/No
1	Segregation	
2	Occupational hazards related to the BMW	
3	Ppe	
4	Needle stick injury	
5	Mercury spill management	
6	Chlorine percentage	
7	Disposal of the BMW	
8	Use of personal protective equipment	
9	Training programs on BMW	

Sl. No	(B) PRACTICE QUESTIONS	Response- Yes/No
1	Of Proper PPE	
2	Immunization against vaccine	
3	Reporting of needle stick injury	
4	Keen observation about the BMW	

(B) HOUSEKEEPING STAFF

HOUSEKEEPING STAFF		
Sl. No	(A) KNOWLEDGE QUESTIONS	Response- Yes/No
1	Segregation	
2	Occupational hazards related to the BMW	
3	Ppe	
4	Needle stick injury	
5	Mercury spill management	
6	Chlorine percentage	
7	Disposal of the BMW	
8	Use of personal protective equipment	
9	Training programs on BMW	

Sl. No	(B) PRACTICE QUESTIONS	Response- Yes/No
1	Use of PPE	
2	Sufficient collection bags of all color	
3	Had a session of training before the joining	
4	Training on BMW	
5	Immunization against vaccine	