REVIEW OF MALPRACTICES IN HANDLING BIOMEDICAL WASTE IN HOSPITALS IN PRIVATE SHCOS IN RURAL SETUPS OF RAJASTHAN: A CROSS ANALYSIS

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Master of Business Administration (MBA)
In

Rural Management

By

Jahnvi Srivastava

Under the Supervision and Guidance of

Prof. Ratna Verma

2021

CONTENTS

DECLARATION BY STUDENT

I hereby declare that this dissertation titled **REVIEW OF MALPRACTICES IN HANDLING BIOMEDICAL WASTE IN HOSPITALS IN PRIVATE SHCOS IN RURAL SETUPS OF RAJASTHAN: A CROSS ANALYSIS** is the Bonafede record of my original research work. I declare that it has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.

(Signature)
JAHNVI SRIVATAVA
Date: 30th March,2021

CERTIFICATE

This is to certify that dissertation **REVIEW OF MALPRACTICES IN HANDLING BIOMEDICAL WASTE IN HOSPITALS IN PRIVATE SHCOS IN RURAL SETUPS OF RAJASTHAN: A CROSS ANALYSIS is** a record of the research work undertaken by **JAHNVI SRIVASTAVA** in partial fulfillment of the requirements for the award of the degree of MBA (Rural Management) from the IIHMR University, Jaipur under my guidance and supervision, she has a serious, scientific and analytical research approach

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Date: 30th March 2021

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Sincerely,

JAHNVI SRIVASTAVA

PROJECT COORDINATOR

HLFPPT, JAIPUR- RAJASTHAN

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- **LIST OF ABBREVIATIONS**

AHA- Assistant hospital administrator
BMW- Biomedical waste
BMWM- Biomedical waste management
CBWTF- Common biomedical waste
ENT- Ear nose throat
ETP- Effluent treatment plant
GMERS- Government medical
MRD- Medical records department
NHM – National Health Mission
OPD- Outpatient department
STD- Sexually transmitted diseases

- **LIST OF GRAPHS**

4. INTRODUCTION

During the diagnostic, therapy or vaccination procedure, any waste is classed as a biomedical waste. human beings, or animals... or for related study or biological testing (preparation from organisms, microorganisms, or metabolic products for diagnosis, treatment, or research). If not managed correctly, a highly infectious biomedical waste produced in the hospital might provide a possible source of the spread of infection. Therefore, a precise procedure should be followed in order to simplify the treatment of biological waste. This study seeks to identify the gaps in the management of biomedical waste from the creation of waste through to collection and storage. Biomedical waste must be defined as any waste created for designation, treatment, protecting or analyzing humans or animals or for creation of biological waste (microorganisms prepared for the designation, treatment, or study of metabolic products). By issue of gazette notice No. 460 dated 27 July 1998 and consequently the latest updated one on 28 March 2016, the Governor of Bharat has established the proper management and disposal of the type of trash. The provisions are equally squeezed and therefore must be fully aware of the fundamental principles of management, treatment and waste management for all medical, dental, nursing and alternative medical personnel. The rules apply equally to our hospitals. The medicinal waste content is indicated Non-hazardous garbage comprises 85% of waste and insecure waste. It's V-J Day. Five-hitter are dangerous but not infectious and 100 percent risky and infectious on the V-J day of risky waste. The problem of medical waste is becoming as a major problem as advances in medical treatment are hyperbolizing the production of waste per patient in health institutions throughout the globe.

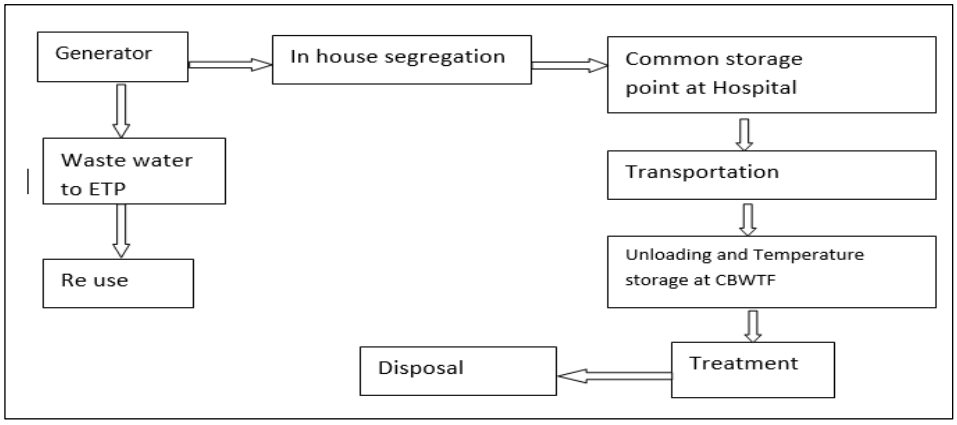


Fig 4.1: BMW management method: ***The diagram depicts the 'as is' procedure for managing biological waste in hospitals.***

6. LITERATURE REVIEW

"Clinical solid waste (CSW) management continues to be a major concern, particularly in most developing-world healthcare facilities. Due to the infectious nature of the waste, poor behaviour and inappropriate disposal procedures used during the management and disposal of CSW are increasing major health risks and pollution. (*Md.SohrabHossain[a],AmuthaSanthanam[b],N.A.Nik Norulaini[c],A.K. MohdOmar[a]. Clinical solid waste management practices and its impact on human health and environment – A review. April 2011; Volume 31, Issue 4, Pages 754-766)* In many nations, including India, biomedical waste has become a severe health issue. Careless and indiscriminate disposal of this material by healthcare and research facilities might lead to the spread of dangerous diseases like hepatitis and AIDS (HIV) among people who handle it and the general population..(*Saurabh Gupta, Ram Boojh. Biomedical waste management practices at Balrampur Hospital, Lucknow, India. December 1, 2006*)

The trash creation rate in India is predicted to be between 05 and 20.0 kg bed1day1, with an annual garbage generation rate of around 033 million tonnes. Bandages, linen, and other infectious trash account for 30–35 percent of hospital solid waste, followed by plastics (7–10 percent), disposable needles (03-05%), glass (3–5%), and other general wastes, including food (40–45 percent). In general, mixed wastes are collected, transported, and disposed of alongside municipal solid wastes. Authorities in many regions are failing to build acceptable systems for a variety of reasons, including a lack of relevant technologies, insufficient financial resources, and a lack of professional expertise and training on waste management. (*A.D.PatilA.V.Shekdar[f1].Health-care waste management in India. October 2001; Volume 63, Issue 2, Pages 211-220*)

According to the World Health Organization, 85 percent of hospital wastes are non-hazardous, 10% are infectious, and 5% are non-infectious but hazardous wastes. In the United States, around 15% of hospital garbage is classified as infectious waste. Depending on the overall amount of waste generated in India, this might be anywhere from 15% to 35%. (*Glenn & Garwal, 1999; Anonymous, 1998; Chitnis et al., 2005*)

Improper biomedical waste management results in serious environmental issues, including pollution of the air, water, and land. Biological, chemical, and radioactive pollutants are the three types of pollutants that cause harm. In India, there are various laws and rules that can be used to solve environmental issues. Pollution's effects on air, radioactivity, land, health, and risks are all examined.

AIR POLLUTION

Air pollution can occur both inside and outside of buildings. Biomedical waste produced as a result of air pollution is divided into three categories: biological, chemical, and radioactive (http://kspcb.kar.nic.in/BMW). Pollution of the indoor environment In the form of spores or pathogens, diseases found in garbage can enter and stay in the air for a long time. Segregation of waste, pre-treatment at the source, and other measures can help to alleviate the problem to a large extent. Sterilizing the rooms will also aid in reducing biological indoor air pollution. (*Askarian et al 2004b; Baveja et al 2000*). Sick Building Syndrome is an illness induced by indoor air pollution produced by the above pollutants and insufficient ventilation (SBS). SBS can be reduced with good building design and well-maintained air conditioners. Chemicals should be used according to the rules. Chemicals should not be

used excessively. (*Bdour 2004, Saurabh & Ram 2006*). Pollution of the air outside Pathogens can pollute the air we breathe outside. Pathogens can enter the atmosphere if biomedical waste is transferred outside the institution without being pretreated, or if it is deposited in open locations. There are two major sources of chemical pollutants that produce outdoor air pollution: open burning and incinerators. The most hazardous technique is open burning of biomedical waste. When inhaled, it can lead to respiratory problems. Dioxins and furans, for example, are carcinogenic organic gases (Burd 2005). The design parameters and upkeep of such treatment and disposal technology should adhere to the established guidelines. (*Bdour 2004*)."

RADIOACTIVE EMISSIONS

Small amounts of radioactive gas may be produced during research and radio-immunoassay procedures. As quickly as feasible, gaseous radioactive materials should be evacuated from the outside. The usage of such a device necessitates trap maintenance and off-gas monitoring *(Malviga 1999).*

Pollution of the water supply. If liquid waste is dumped into sewers without being adequately treated, it can pollute the water supply (Rao, 1995; Rao & Garg, 1994). Water contamination can change pH, BOD, DO, COD, and other parameters. Dioxins have been found in water bodies around incineration factories in the past. Airborne dioxins infiltrate the water body.

(*Chitins et al, 2000; Ravikant et al, 2002; Saini & Dadhwal 1995*)

RADIOACTIVE DISCHARGE

Chemical or biological research, bodily organ imaging, radioactive spill cleanup, patient's urine, and radioimmunoassay scintillation liquids can all produce radioactive waste in liquid form. In most conditions, urine and faces can be processed as non-radioactive waste if the patient's chamber is tested for radioactivity on a regular basis. infection. (*Patil & Pokhrel, 2004; Shah et al, 2001*).

LAND POLLUTION

Infectious waste, abandoned pharmaceuticals, in treatment, chemicals utilized ash and other waste produced during processing all contribute to the contamination of soil from bio-medical waste. Heavy J. Int. Environmental Application & Science, Vol. 4 (1): 65-78, Heavy J. Int. Environmental Application & Science, Vol. 4 (1): 65-78, Heavy J. Int (2009) 68 metals found in garbage, such as cadmium, lead, mercury, and others, will be absorbed by plants and eventually enter the food chain. Pollutants such as nitrates and phosphates can be found in landfill leachates.

Excessive concentrations of trace nutritional elements, as well as other elements such as heavy metals, in soil are detrimental to crops, animals, and humans *(Mehta 1998).*

"According to the World Health Organization (WHO), global life expectancy is rising year after year. Infectious disease-related mortality, on the other hand, are on the rise. According to a research done by the WHO in 1996, infectious diseases claim the lives of more than 50,000 individuals every day. Inadequate waste management is one of the key causes of the rise of infectious diseases. Infections and diseases that have been documented to have spread through biomedical waste are listed below. Other prevalent diseases spread by

inappropriate waste management include tuberculosis, pneumonia, diarrheal disorders, tetanus, whooping cough, and others. (*Chitins et al, 2002; Chitins et al, 2003; Tudor et al, 2005; Marinkovic et al, 2005*).

OCCUPATIONAL HEALTH HAZARDS

Occupational health concerns exist for janitorial and laundry workers, nurses, emergency medical personnel, and refuse workers. Injuries from sharps and exposure to harmful chemical waste and radioactive waste also cause health hazards to employees in institutions generating bio-medical waste. Proper management of waste can solve the problem of occupational hazards to a large extent (*Patil & Shekar, 2001*)

Hazards to the general public the general public's health can also be adversely affected by bio-medical waste. Improper practices such as dumping of bio-medical waste in municipal dustbins, open spaces, water bodies etc., leads to the spread of diseases. Emissions from incinerators and open burning also lead to exposure to harmful gases which can cause cancer and respiratory diseases (*Manohar et al, 1998; Da silva et al, 2005*)."

Even though extensive progress was made to ensure the safe processing and Clinical Waste Elimination, poor supervision can be seen from the point of collection through final disposal. The main causes of CSW misconduct are, in most cases, a lack of suitable legislation, qualified clinical staff, awareness, and effective control.

Biomedical waste management is still in its early stages around the world. There is a lot of misunderstanding among generators, operators, decision-makers, and the general public regarding how to safely manage bio-medical waste. It's possible that the cause is a lack of awareness. As a result, environmental resource material for hospital supervisors, Nursing Staff, Doctor, and Housekeeper is urgently needed. (*B. Ramesh Babu*, A.K. Parande, R. Rajalakshmi, P. Suriyakala, M. Volga. Management of Biomedical Waste in India and Other Countries: A Review; Received July 29, 2008; Accepted March 16, 2009)*

7. METHOD

Study Questions

- What is the current process flow for BMW management in the hospital?
- What are the gaps present in the process?
- What are the causes for the gaps present in the process?
- What value additions can be done to cover the gaps present in the process?

Design of the study and analysis

Non-probability convenient sampling was used in a descriptive research.

Study area and location

The investigation took place in the Intensive Care Unit, Labor Ward, Wards (Medical, Surgical, Gynecology), Operation Theatre, Emergency, Laboratories (Biochemistry, Pathology), and Storage Room at the hospital.

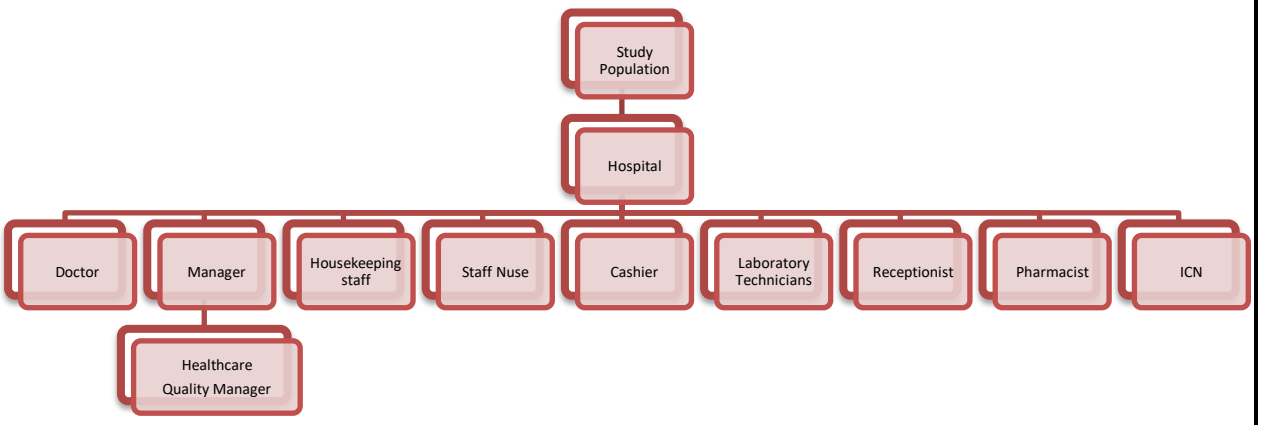
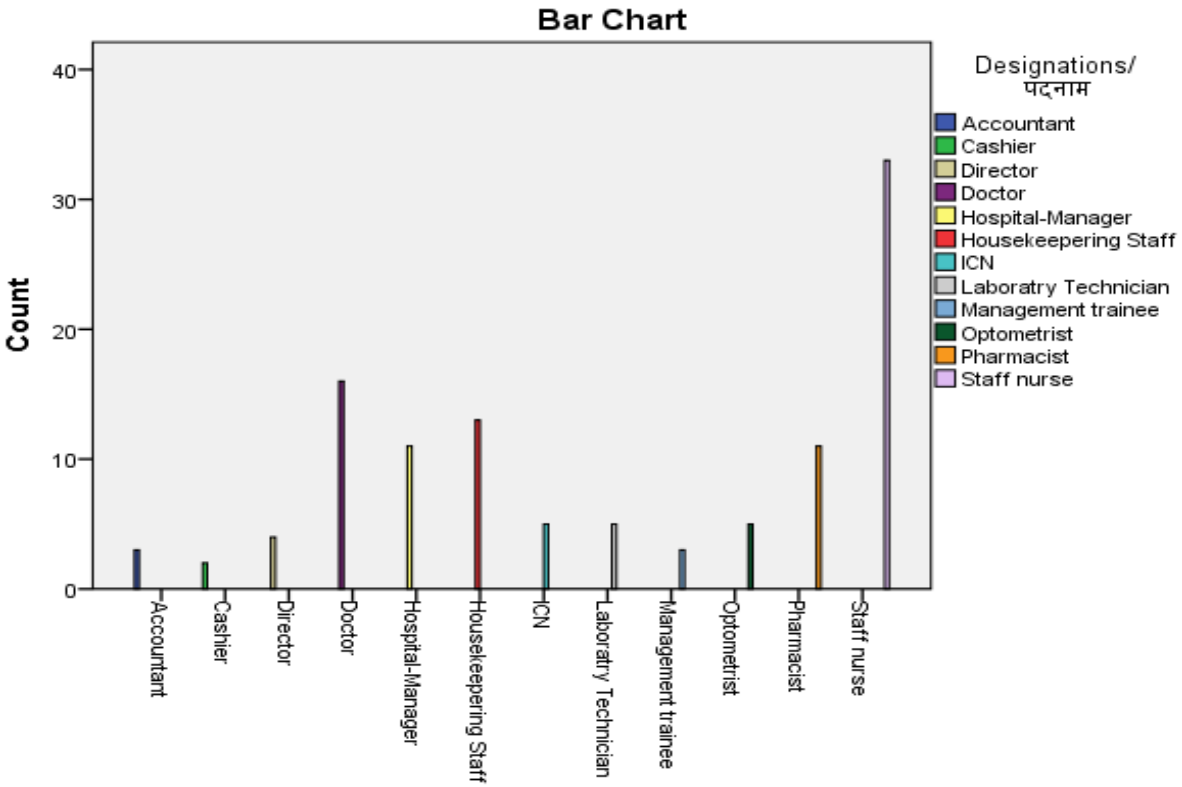


Fig.6.1: Image of the study population which are include in study.

Eligibility Standards:

The study comprised all contemplating individuals from various groups of the workforce. A total of 111 suitable participants were chosen for the study's sampling. Two hospitals' staff are involved.



Graph.6.2: The Graphical repreparation of eligibility criteria

Objectives

This study examines the current biomedical waste management process flow and identifies gaps at many stages of the process, including waste generation, collection, storage, and transportation. It also pinpoints the causes of the gaps and provides ways to improve the process.

Research period

The research was carried out for three months, from January to March 2021.

Accumulations of data

To meet the objective of the paper, a primary cross-sectional study is conducted with descriptive and explorative research design. To get the information of individuals semi structured questionnaire is designed with Three sub- category (Generation, Collection and Storage, Transportation) Eighteen questions in the google forms and shared with 100 numbers of participants present in the hospital Among them, 111 participants revert with in the stipulated time. To select the participants convenience sampling method is used. The data are collected from the google forms from 25th of January 2021 to 25th of March 2021 and analyzed in the SPSS 21.0 version with bivariate analysis such as chi-square and cross tabulation. and the likely reasons of the gaps were discovered using fish bone analysis (Ishikawa diagram).

8. RESULTS

a. Process Flow for biomedical waste management:

The hospital's biomedical waste is controlled on levels.:

i) Generation and Segregation:

***Fig.7.*1Waste generation and segregation process*:** *Waste is generated and segregated into five color-coded bins: green, yellow, red, blue, and white. The images come from two different hospitals.*

ii) Collection and Storage:

Fig 7.2: **Waste is collected in color-coded bags and placed in the same-colored** *dustbins in a separate assortment room in each department. Every day at 8 a.m., the waste is moved to a storing facility located outside the hospital building, where it is weighed using a vernier calliper and transported to the outsourced facility.*

iii) Trash Transportation:

Fig7.3: **Trash transportation***: The figure depicts the hospital's waste transportation facilities. Departmental garbage is transported in trolleys, which are segregated into infected and non-infectious waste. A municipality van gets it from the communal storage room and transports it to the garbage house.*

A. <u>During the research, some deficiencies in the hospital's management of medicine waste were uncovered, as indicated below:</u>

i) <u>Uncover Dustbins</u>:

Fig 7.4: **Uncovered Dustbin*: Increasing danger of infection in key departments (labour, emergency) are revealed.***

ii) <u>Incorrectly colored bag in incorrect bin:</u>

***Fig 7.5*: Wrong-colored bag in the wrong bin*: There is a color mismatch between the bin and the bag, which increases the likelihood of trash mixing*.

iii) <u>Mislabeled garbage with incorrect color coding:</u>

Fig.7.6: **Wrong-colored waste in the wrong-colored bag *(Blood collection room and Labor room): Waste was dumped into the wrong-colored bag.***

ii) **The container was full to more than 3/4 capacity:**

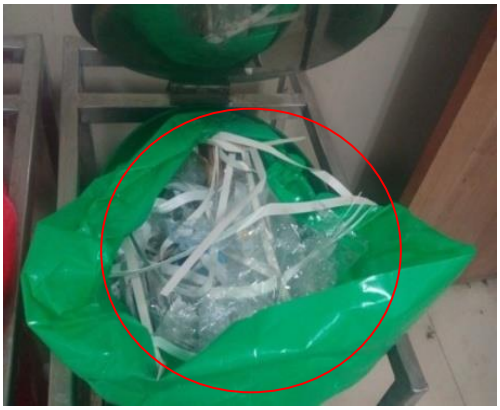


Fig 7.7: **The container was full to more than 3/4 capacity:** ***There is no regular pickup of the garbage in some areas, which means that the bins are overfilled...***

ii) Waste is stored:

Fig7.8: **Waste is stored*****: waste is stored in diverse places, resulting to inadequate control of infection***

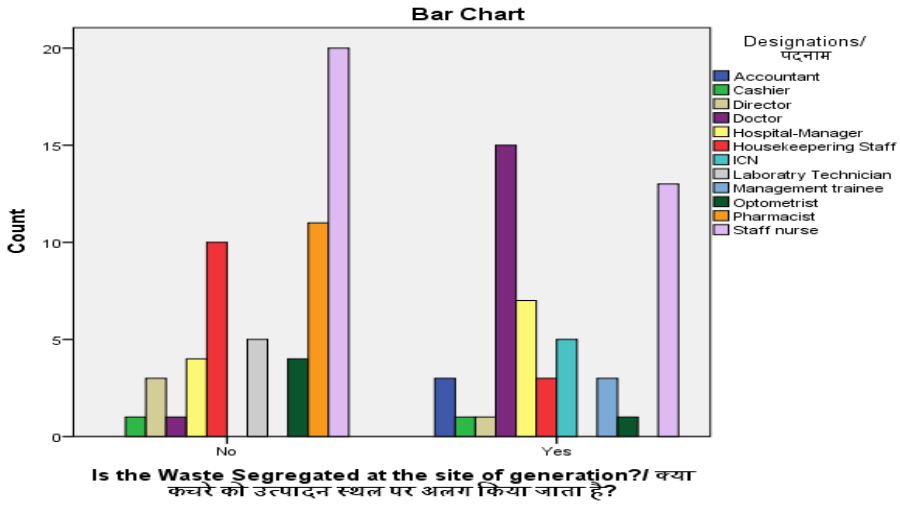
B. Statical Methods:

The data was analysis using the MS-Excel, SPSS. The Chai-square test was performed to study the association between the difference Group related to their understanding and attitude toward Biomedical Waste Management

a) Is the Waste Segregated at the site of generation?

		Is the Waste Segregated at the site of generation?		Total
		No	Yes	
Designations	Accountant	0	3	3
	Cashier	1	1	2
	Director	3	1	4
	Doctor	1	15	16
	Hospital-Manager	4	7	11
	Housekeeping Staff	10	3	13
	ICN	0	5	5
	Laboratory Technician	5	0	5
	Management trainee	0	3	3
	Optometrist	4	1	5
	Pharmacist	11	0	11
	Staff nurse	20	13	33
Total		59	52	111
Pearson's Chi-square value is X^2 47.871 (p=0.00)				

Table.7.1: The crosstabulation of designation and is the waste segregated at the site of generation. It demonstrates the result that out of 111 responses, 59 are unaware about it.

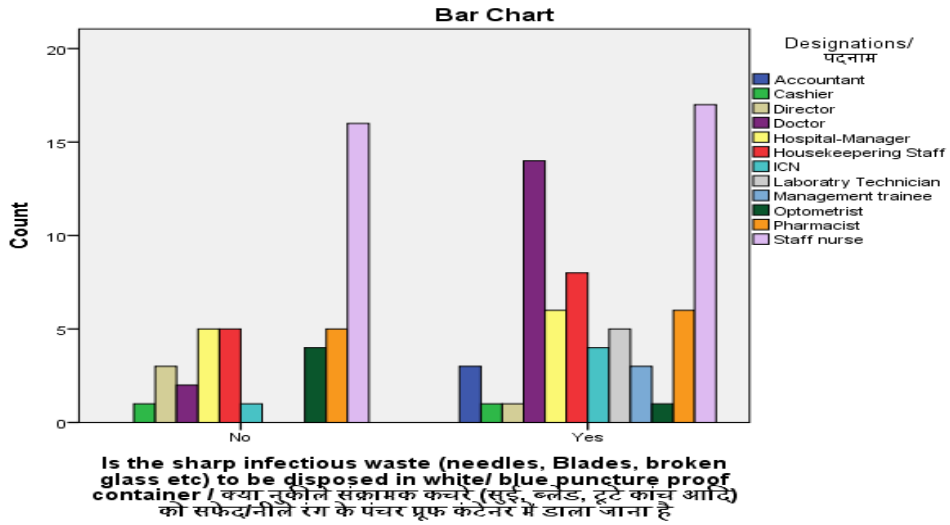


Graph 7.1. ***Is the Waste Segregated at the site of generation****, The graphical representation of responses.*

b) Is the sharp infectious waste (needles, Blades, broken glass etc) to be disposed in white/ blue puncture proof container?

		Is the sharp infectious waste (needles, Blades, broken glass etc) to be disposed in white/ blue puncture proof container		
		No	Yes	Total
Designations	Accountant	0	3	3
	Cashier	1	1	2
	Director	3	1	4
	Doctor	2	14	16
	Hospital-Manager	5	6	11
	housekeeping Staff	5	8	13
	ICN	1	4	5
	Laboratory Technician	0	5	5
	Management trainee	0	3	3
	Optometrist	4	1	5
	Pharmacist	5	6	11
	Staff nurse	16	17	33
Total		42	69	111
Pearson's Chi-square value is X^2 20.128 (p=0.44)				

Table. 7.2. ***The crosstabulation of designation and is the sharp infectious waste (needles, Blades, Broken Glass) to be disposed in white/blue puncture proof container. It demonstrates the result that out of 111 responses, 42 are unaware about it.***

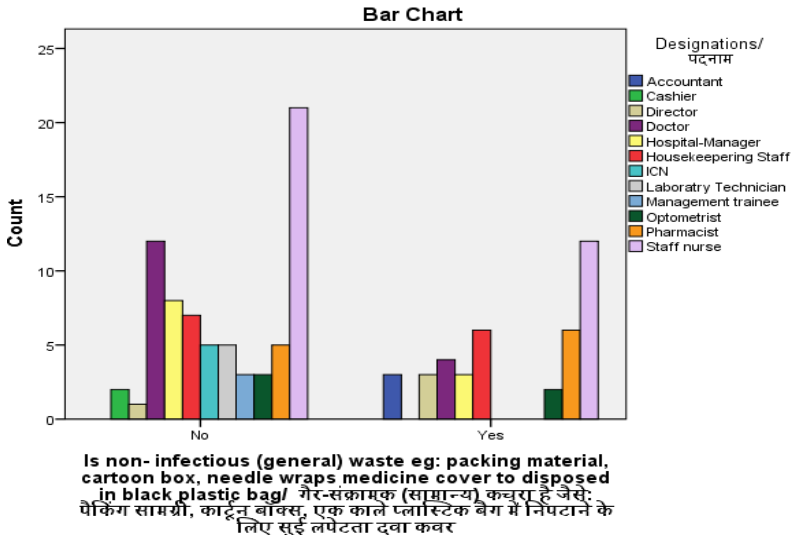


Graph 7.2. **Is the sharp infectious waste (needles, Blades, broken glass etc) to be disposed in white/ blue puncture proof container**, *The graphical representation of responses.*

c) Is non- infectious (general) waste e.g.: packing material, cartoon box, needle wraps medicine cover to disposed in black plastic bag?

		Is non- infectious (general) waste eg: packing material, cartoon box, needle wraps medicine cover to disposed in black plastic bag		Total
		No	Yes	
Designations	Accountant	0	3	3
	Cashier	2	0	2
	Director	1	3	4
	Doctor	12	4	16
	Hospital-Manager	8	3	11
	Housekeeping Staff	7	6	13
	ICN	5	0	5
	Laboratory Technician	5	0	5
	Management trainee	3	0	3
	Optometrist	3	2	5
	Pharmacist	5	6	11
	Staff nurse	21	12	33
Total		72	39	111
Pearson's Chi-square value is X^2 20.057 (p=0.45)				

Table. 7.3. ***The crosstabulation of designation and is non- infectious (general) waste e.g.: packing material, cartoon box, needle wraps medicine cover to disposed in black plastic bag. It demonstrates the result that out of 111 responses, 72 are unaware about it.***

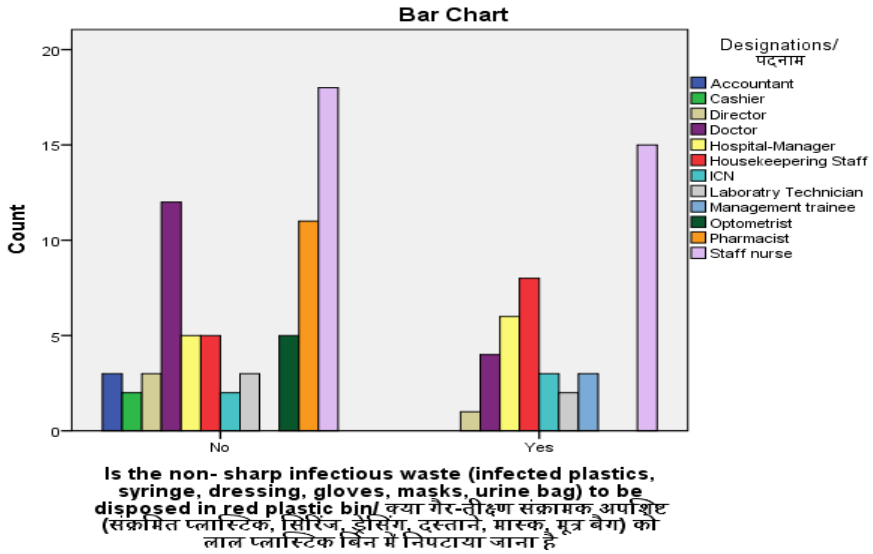


Graph 7.3. **Is non- infectious (general) waste e.g.: packing material, cartoon box, needle wraps medicine cover to disposed in black plastic bag,** *The graphical representation of responses*

d) Is the non- sharp infectious waste (infected plastics, syringe, dressing, gloves, masks, urine bag) to be disposed in red plastic bin?

		Is the non- sharp infectious waste (infected plastics, syringe, dressing, gloves, masks, urine bag) to be disposed in red plastic bin		
		No	Yes	Total
Designations	Accountant	3	0	3
	Cashier	2	0	2
	Director	3	1	4
	Doctor	12	4	16
	Hospital-Manager	5	6	11
	Housekeeping Staff	5	8	13
	ICN	2	3	5
	Laboratory Technician	3	2	5
	Management trainee	0	3	3
	Optometrist	5	0	5
	Pharmacist	11	0	11
	Staff nurse	18	15	33
Total		69	42	111
Pearson's Chi-square value is X^2 25.391 (p=0.08)				

Table. 7.4. ***The crosstabulation of designation and is the non- sharp infectious waste (infected plastics, syringe, dressing, gloves, masks, urine bag) to be disposed in red plastic bin. It demonstrates the result that out of 111 responses, 69 are unaware about it.***

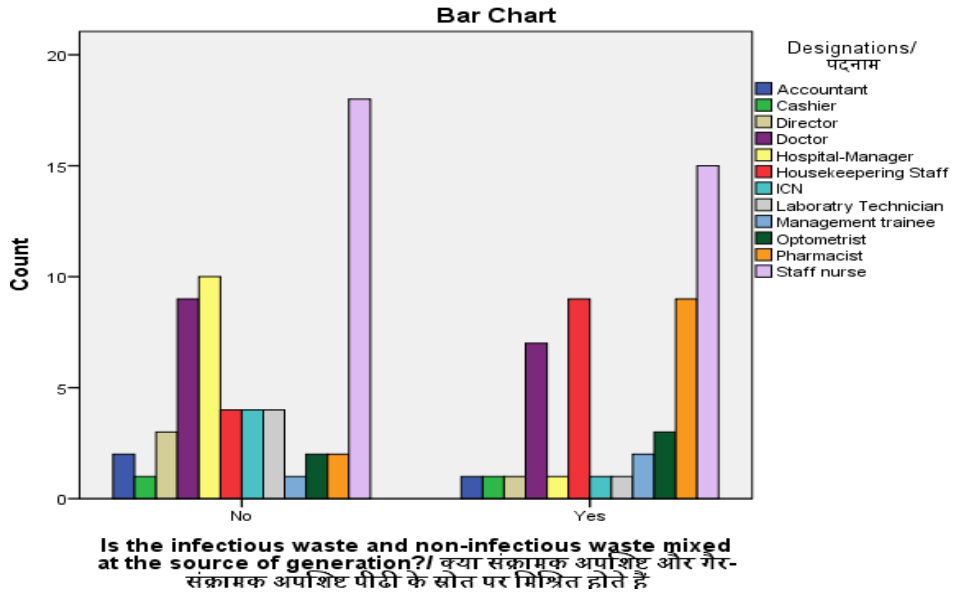


***Graph 7.4*, Is the non- sharp infectious waste (infected plastics, syringe, dressing, gloves, masks, urine bag) to be disposed in red plastic bin** *The graphical representation of responses.*

e) Is the infectious waste and non-infectious waste mixed at the source of generation?

		Is the infectious waste and non-infectious waste mixed at the source of generation		
		No	Yes	Total
Designations	Accountant	2	1	3
	Cashier	1	1	2
	Director	3	1	4
	Doctor	9	7	16
	Hospital-Manager	10	1	11
	Housekeeping Staff	4	9	13
	ICN	4	1	5
	Laboratory Technician	4	1	5
	Management trainee	1	2	3
	Optometrist	2	3	5
	Pharmacist	2	9	11
	Staff nurse	18	15	33
Total		60	51	111
Pearson's Chi-square value is X^2 25.391 (p=0.08)				

Table. 7.5. ***The crosstabulation of designation and is the infectious waste and non-infectious waste mixed at the source of generation. It demonstrates the result that out of 111 responses, 60 are unaware about it.***

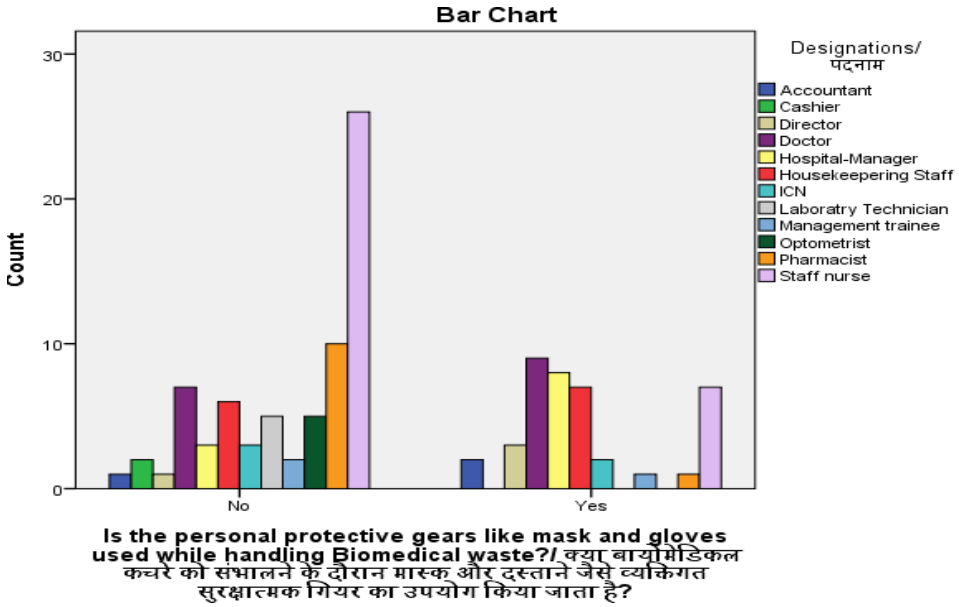


Graph 7.5 **Is the infectious waste and non-infectious waste mixed at the source of generation**. *The graphical representation of responses.*

f) **Is the personal protective gears like mask and gloves used while handling Biomedical waste?**

		Is the personal protective gears like mask and gloves used while handling Biomedical waste?		
		No	Yes	Total
Designations	Accountant	1	2	3
	Cashier	2	0	2
	Director	1	3	4
	Doctor	7	9	16
	Hospital-Manager	3	8	11
	Housekeeping Staff	6	7	13
	ICN	3	2	5
	Laboratory Technician	5	0	5
	Management trainee	2	1	3
	Optometrist	5	0	5
	Pharmacist	10	1	11
	Staff nurse	26	7	33
Total		71	40	111
Pearson's Chi-square value is X^2 28.391 (p=0.03)				

Table. 7.6. ***The crosstabulation of designation and is the personal protective gears like mask and gloves used while handling Biomedical waste? it demonstrates the result that out of 111 responses, 71 are unaware about it.***

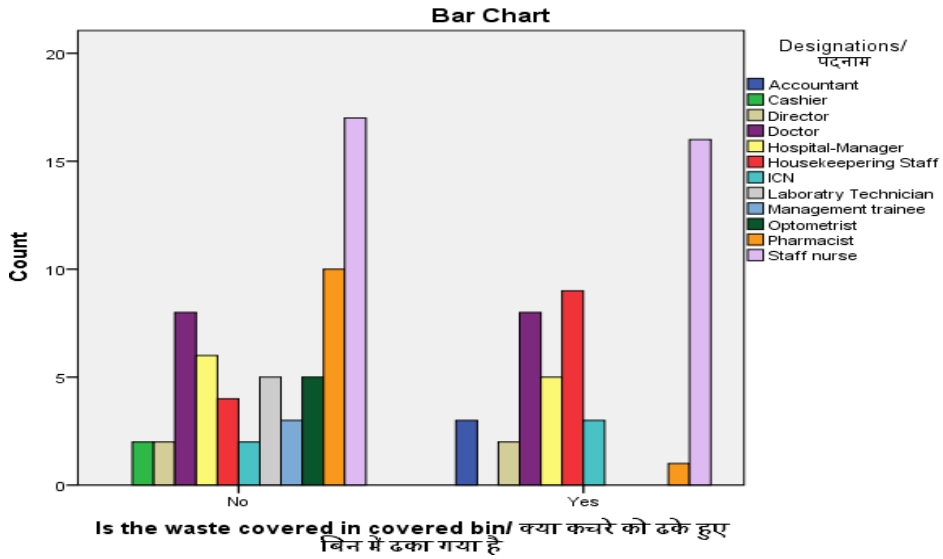


Graph 7.6. **Is the personal protective gears like mask and gloves used while handling Biomedical waste?** *The graphical representation of responses.*

g) Is the waste covered in covered bin?

		Is the waste covered in covered bin		Total
		No	Yes	
Designations	Accountant	0	3	3
	Cashier	2	0	2
	Director	2	2	4
	Doctor	8	8	16
	Hospital-Manager	6	5	11
	Housekeeping Staff	4	9	13
	ICN	2	3	5
	Laboratory Technician	5	0	5
	Management trainee	3	0	3
	Optometrist	5	0	5
	Pharmacist	10	1	11
	Staff nurse	17	16	33
Total		64	47	111
Pearson's Chi-square value is X^2 25.605 (p=0.07)				

Table. 7.7. ***The crosstabulation of designation and is the waste covered in covered bin? It demonstrates the result that out of 111 responses, 64 are unaware about it.***

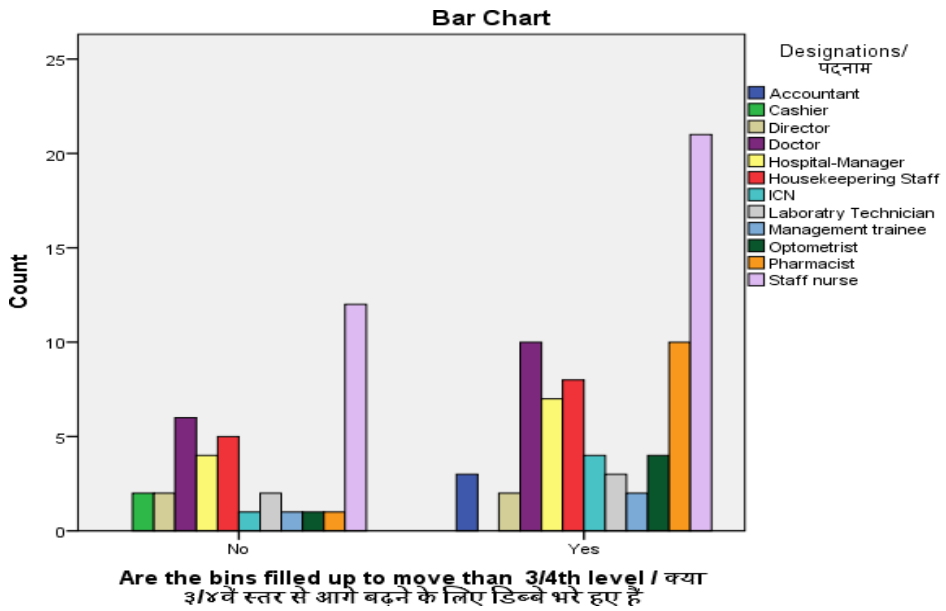


***Graph 7.7**. **Is the waste covered in covered bin?** The graphical representation of responses.*

h) Are the bins filled up to move than 3/4th level?

		Are the bins filled up to move than 3/4th level		Total
		No	Yes	
Designations	Accountant	0	3	3
	Cashier	2	0	2
	Director	2	2	4
	Doctor	6	10	16
	Hospital-Manager	4	7	11
	Housekeeping Staff	5	8	13
	ICN	1	4	5
	Laboratory Technician	2	3	5
	Management trainee	1	2	3
	Optometrist	1	4	5
	Pharmacist	1	10	11
	Staff nurse	12	21	33
Total		37	74	111
Pearson's Chi-square value is X^2 10.256 (p=0.07)				

Table. 7.8. ***The crosstabulation of designation and are the bins filled up to move than 3/4th level? It demonstrates the result that out of 111 responses, 37 are unaware about it.***

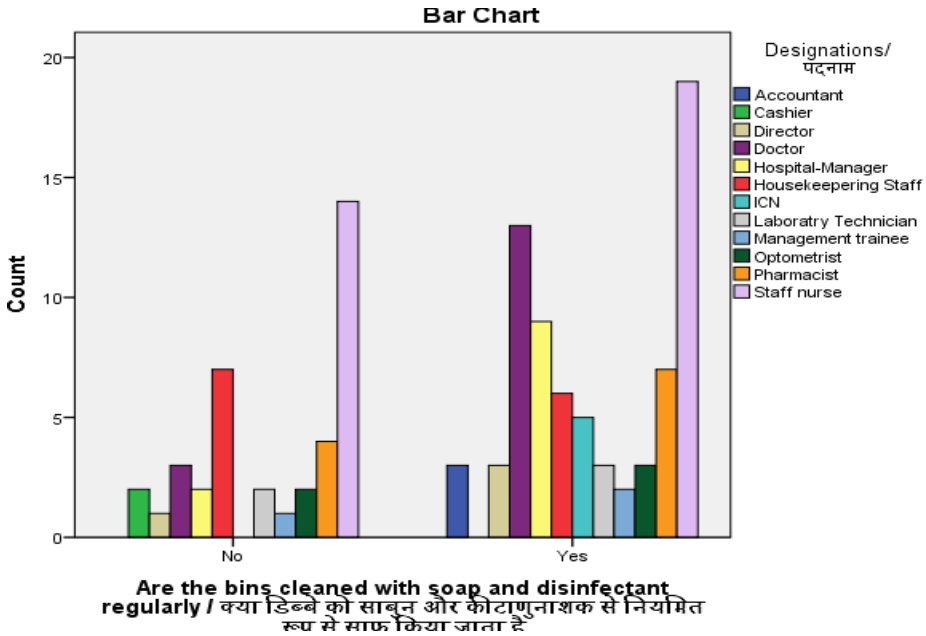


Graph 7.8. ***Are the bins filled up to move than 3/4th level.?*** *The graphical representation of responses.*

i) Are the bins cleaned with soap and disinfectant regularly?

		Are the bins cleaned with soap and disinfectant regularly		
		No	Yes	Total
Designations	Accountant	3	0	3
	Cashier	2	0	2
	Director	1	3	4
	Doctor	3	13	16
	Hospital-Manager	9	2	11
	Housekeeping Staff	7	6	13
	ICN	0	5	5
	Laboratory Technician	2	3	5
	Management trainee	1	2	3
	Optometrist	2	3	5
	Pharmacist	7	4	11
	Staff nurse	18	15	33
Total		55	56	111
Pearson's Chi-square value is X^2 14.246 (p=0.09)				

Table.7.9. ***The crosstabulation of designation and are the bins cleaned with soap and disinfectant regularly It demonstrates the result that out of 111 responses, 38 are unaware about it.***



Graph 7.9. ***Are the bins cleaned with soap and disinfectant regularly the graphical representation of responses****.*

C. Fishbone analysis (Ishikawa diagram):

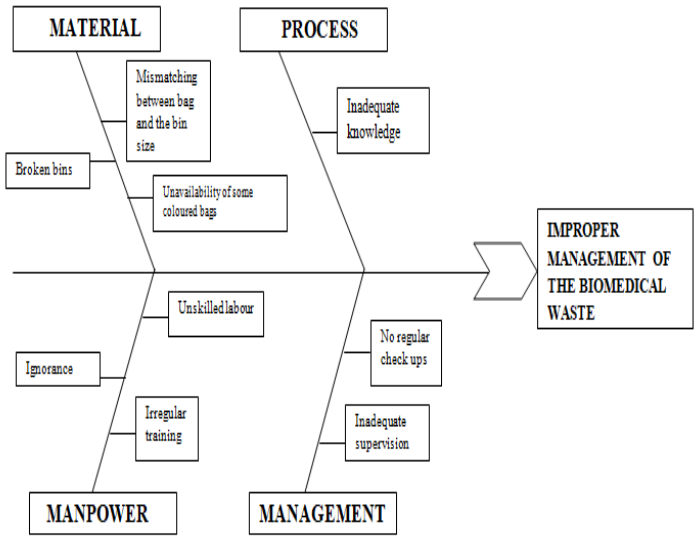


Fig.7.9: **Diagram of a fishbone** *the above-mentioned fishbone study indicates nine key reasons of gaps. These reasons are based on staff observations and some questions.*

D. Value addition:

GAP ANALYSIS
DATE OF GAP ANALYSIS: January 2021 from March 2021
PROJECT NAME: REVIEW OF MALPRACTICES IN HANDLING BIOMEDICAL WASTE IN HOSPITALS IN PRIVATE SHCOS IN RURAL SETUPS OF RAJASTHAN: A CROSS ANALYSIS.
OBJECTIVES OF PROJECT: • To map the current biomedical waste management process flow. • To identify gaps at various stages of the process, such as trash production, assortment, storing, and conveyance. • To determine the causes of the gaps. • To make suggestions for adding value to the process.

ACTIONS	GAPS DISCOVERED	REPERCUSSIONS	ACTIONS TO BE CARRIED OUT
1.	**Waste kept on the shelf**	**Infection spread**	**Staff training and review should be done on a regular basis.**
2.	**During waste processing, no personal protective equipment is used.**	**Infection spread.**	**Staff training that is up to date**

3.	**The wrong color bag was placed in the wrong bin.**	**As a result of waste mixing, incorrect disposal occurs.**	**Staff training that is up to date**
4.	**Wrong waste with the incorrect color coding**	**Improper disposal**	**Staff training and correct segregation are essential.**
5.	**Bins that are not covered**	**Infection spread**	**Bins must be well covered.**
6.	**Garbage dumped outside the bin**	**Infection spread**	**A regular check should be performed, as well as thorough personnel training.**
	The trash is tossed on top of or outside of the bag.	**Infection spread**	**A regular check should be performed, as well as thorough personnel training**
8.	**Outside the bin, garbage is dangling.**	**Infection spread**	**A regular check should be performed, as well as thorough personnel training**
9.	**Moreover 3/4 of the bin's capacity had been filled.**	**Possibilities of bin overfilling**	**A regular check should be performed, as well as thorough personnel training**
10.	**The waste collection bags are suspended from the sides of the patient trolley.**	**Infection spread**	**Review on a regular basis**
11.	**The bins aren't cleaned on a regular basis.**	**Infection spread**	**Staff training and review should be done on a regular basis.**

Collection and storage of garbage

During the production and separation of garbage

Table.7.1. Value addition: ***The table shows some value adds that can be used to close the gaps that have been discovered.***

9. CONCLUSION

An observational research on 'Review of current biomedical waste management methods' was conducted via a gap analysis technique. Between January and March 2021 in rural Rajasthan, private SHCOS will outline the of A's process and then discover the gaps between the ideal and the current management level.

1. Production and insulation of waste
2. Collection and storage of waste
3. Carriage of waste

The research found 11 significant shortcomings in the handling of biomedical waste:

1. Bins that are not covered
2. Incorrectly colored bag in incorrect bin
3. Incorrect waste color labelling
4. Garbage dumped outside the container
5. Waste should be dumped on or outside the bag.
6. Garbage dangling from the trash
7. More than 3/4 of the bin's capacity had been filled.
8. Waste that has been placed on the shelf
9. When handling trash, no personal protective equipment is worn.
10. On the sides of the patient cart the bags are hung.
11. The trash cans are not cleaned on a regular basis.

A fish bone study was carried out for the aforementioned lacunae and it was found that the main root causes of the lacunae can be:

1. Bins that have been broken
2. Colored plastic bags are not readily available.
3. The trashcan and the plastic bag are of different sizes.
4. The staff's expertise of biological waste is insufficient, management principles
5. Low-wage workers
6. Unusual trainings
7. The staff's irrational attitude
8.There are no regular checkups

In addition, the organization should be informed of certain added values.

9.APPENDIX

a. Gap analysis template

GAP ANALYSIS
DATE OF GAP ANALYSIS:
PROJECT NAME:
OBJECTIVES OF PROJECT:

ACTIONS	**GAPS DISCOVERED**	**REPERCUSSIONS**	**ACTIONS TO BE CARRIED OUT**

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