

**EFFECTIVENESS OF CORRECTIVE ACTIONS TAKEN BY
THUMBAY HOSPITAL, FUJAIRAH FOR BIOMEDICAL WASTE
MANAGEMENT PROCESS POST APR - 19 TO APR - 23**

Dissertation submitted to



**INSTITUTE OF HEALTH MANAGEMENT & RESEARCH
JAIPUR**

For the partial fulfillment of the award
of the degree of Master of Business Administration

In

Hospital & Health Management

By

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Under the Supervision and Guidance of

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Professor of Health Management

2023

DECLARATION BY STUDENT

I hereby declare that this dissertation titled “A Study on Effectiveness of corrective actions taken by Thumbay Hospital, Fujairah for biomedical waste management process post-Apr -19 to Apr - 23” is the bonafide 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 Information derived from the published or unpublished work of others has been duly acknowledged in the text.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)



The student's name: Ms. Sajini Shivan Kutty

Date :

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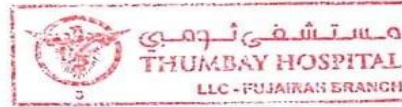
To Whom So Ever It May Concern

This is to certify that **Ms. Sajini Shivan Kutty** holder of **Indian** Passport Number **T2929530** was working in our Organization as a Management Trainee in the Department of Quality Assurance from 13th March 2023 to 27th May 2023, as a part of her dissertation report for MBA (Hospital & Health Management) Program. She has completed her assigned project at Thumbay Hospital Fujairah.

We wish her all the best in her future endeavors.

For Thumbay Hospital, Fujairah.

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CERTIFICATE

This is to certify that the dissertation titled “A Study on Effectiveness of corrective actions taken by Thumbay Hospital, Fujairah for biomedical waste management process post-Apr - 19 to Apr - 23” is a record of the research work undertaken by Ms. Sajini Shivan Kutty in partial fulfillment of the requirements for the award of the degree of MBA (Hospital and Health Management) from the IIHMR University, Jaipur under my guidance and supervision and his/her approach to the research study has been sincere, scientific, and analytical.

Faculty Guide IIHMR University, Jaipur

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ABSTRACT

INTRODUCTION

Any waste produced during patient care procedures in a health care setting that has the potential to be harmful to both people and the environment is referred to as biomedical waste (BMW). Clinical waste, medical trash, and healthcare waste are other names for it. Biomedical waste management is governed in the US by the Environmental Protection Agency (EPA), and each state has its own rules. The Biological Waste Management (BMW) Rules of 2016 have been put into action in India to manage biological waste in a secure and efficient manner. The National Health Service (NHS) in the United Kingdom has policies in place for the handling of medical waste.

RESEARCH QUESTION

Has there been any change in the overall quantity of biomedical waste generation due to corrective measures taken by Thumbay Hospital, Fujairah between April - 19, to April - 23?

OBJECTIVES

- 1) To compare the Biomedical Waste Generation in the hospital between Apr - 19 and Apr - 23.
- 2) To know the effect of the corrective measures which were taken post-Apr - 19 by Thumbay Hospital, Fujairah for Biomedical Waste Management.

MATERIAL AND METHOD

- **Study design:** A Cross-sectional Comparative study
- **Study setting:** Thumbay Hospital, Fujairah
- **Study period:** 2 months
- **Study participants:** Biomedical Waste Management Department, Infection Control Department, Quality Department, Housekeeping Department, CSSD Department,

and Nursing Department will be the participants in this study.

- **Type of data:** Secondary data
- **Data analysis tool:** MS. Excel

RESULTS

- After the analysis, the waste generation in Labor Room decreased to 3.65 kg/patient from 7.79 kg/patient which is a 53.14% reduction.
- And in NICU, waste generation is increased to 1.33kg/patient from 0.63 kg/patient which is an increase of 111.11%.
- Also, in NICU there was a significant increase in waste generation by -10.55 kg in Apr-23.

CONCLUSION

Due to the interventions, it is evident from the research that each department has seen a drop in the production of biomedical waste, allowing the process to be optimized. Numerous departments have also experienced major transformation, which has decreased costs.

ACKNOWLEDGEMENT

I would like to thank **Dr. (Col) Mahendra Kumar (Professor & Dean at the Institute of Health Management Research)** was essential in providing me with the confidence that occasionally needed to execute this project effectively.

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In first place, I want to express our gratitude to **Dr. Shihad Mohammed Khader (Chief Operating Officer of Thumbay Hospital, Fujairah)**, who provided me with the opportunity to perform research on the Biomedical Waste Management Process Effectiveness Analysis Improvement Project. He came up with the concept and has been the project's constant compass ever since.

I was able to effectively navigate any challenges during the study with the assistance of **Dr. Osama (Medical Director, at Thumbay Hospital Fujairah)**. I want to express my sincere appreciation to him.

Dr. Krishna Sudheer, (Operations Manager at Thumbay Hospital in Fujairah), assisted me in better understanding how each department in the hospital operated. He also increased my knowledge and made our work easier.

Mr. Abdul Moizz, (Safety Officer of Thumbay Hospital in Fujairah), collaborated with me throughout the dissertation process, helped me overcome all obstacles, and spoke on my behalf when speaking with top management and other stakeholders. He deserves a ton of

credit for making this attempt a success.

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To everybody who has helped with my endeavor, I would like to express my sincere appreciation. I'm appreciative of the information, abilities, and opportunities that this experience has provided me since it has changed me both professionally and personally.

Finally, I would like to express our sincere appreciation to every member of Thumbay Hospital, Fujairah, and all the Department personnel who have helped us out whenever I needed it.

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LIST OF ABBREVIATIONS

BMW	Biomedical Waste Management
MOCCAЕ	The Ministry of Climate Change and Environment
UAE	United Arab Emirates
EU	European Union
NICU	Neonatal Intensive Care Unit
EPA	Environmental Protection Agency
NHS	National Health Service

CHAPTER 1: INTRODUCTION

The term "biomedical waste management" describes the appropriate processing, treatment, and disposal of waste produced in hospitals, labs, research institutes, and other healthcare-related settings. For the sake of environmental preservation, public health protection, and infection control, biomedical waste management is essential. While I can give you a broad picture, it's crucial to keep in mind that many nations may have distinct, unique laws and customs.

The Ministry of Climate Change and Environment (MOCCAEC) in the United Arab Emirates (UAE) oversees the management of biomedical waste in the country. To guarantee the secure management, separation, storage, transportation, treatment, and disposal of biomedical waste, the MOCCAEC has put in place rules and standards. Healthcare institutions must follow stringent management procedures and have designated storage sites for biological waste. The waste is often cleaned up using autoclaving, incineration, or other alternative treatment techniques, and the ash or leftovers are disposed of at authorized facilities.

European nations: The rules and frameworks for managing biological waste are specified. Member states must implement directives and recommendations from the European Union (EU) into their domestic legislation. Two significant directives regarding the management of biological waste are the Waste Framework Directive (2008/98/EC) and the Directive on Waste from the Healthcare Sector (2000/76/EC).

The management of biological waste in European nations is extensive, with an emphasis on waste reduction, segregation, and appropriate treatment. Depending on its potential risk, waste is divided into many categories, and each category is handled and processed as such. Incineration, autoclaving, microwave therapy, and chemical disinfection are frequently used treatment techniques. For the collection, transportation, treatment, and disposal of biological waste, EU member states normally have authorized facilities and specialized businesses.

Furthermore, European nations frequently support the investigation and creation of novel waste management techniques as well as the use of eco-friendly procedures. They also place a strong emphasis on healthcare professionals receiving education and training to guarantee that laws are followed and that suitable waste management techniques are used.

Because each nation implements the EU directives in its unique way, it is crucial to keep in mind that precise practices and legislation may vary among European nations. To obtain more comprehensive and current information on the management of biomedical waste, it is advisable to consult the nation of interest's laws and regulations.

AIM

The aim of this study is to compare the biomedical waste generation in Thumbay Hospital, Fujairah, between April - 19 and April - 23, and to know the effect of the corrective measures implemented post-April - 19 for biomedical waste management.

OBJECTIVE

1. To compare the Biomedical Waste Generation in the hospital between Apr - 19 and Apr – 23.
2. To know the effect of the corrective measures which were taken post-Apr - 19 by Thumbay Hospital, Fujairah for Biomedical Waste Management.

RESEARCH QUESTION

Has there been any change in the overall quantity of biomedical waste generation due to corrective measures taken by Thumbay Hospital, Fujairah between April - 19, to April - 23?

CHAPTER: 2 REVIEW OF LITERATURE

SR.NO	AUTHOR	STUDY DESIGN	YEAR OF STUDY	SAMPLE SIZE	LEARNINGS
1	Mosquera M, Andrés-Prado MJ, Rodríguez-Caravaca G, Latasa P, Mosquera MEG.	A quasi-experimental study	2014	No Sampling done	The hospital's biological waste segregation is improved by the health care waste management training, which also has the added benefit of lowering the volume and expense of medical waste.
2	Kumar R, Gupta AK, Aggarwal AK, Kumar A. A	A descriptive study	2014	No Sampling done	This study used a checklist to assess the biological waste management procedures used by several patient care areas at a tertiary care medical facility in North India. After the study, it was

					determined that more attention should be placed on "mutilating recyclable waste" and "disinfecting waste," particularly in "Treatment Rooms of Wards," which are used solely by resident doctors.
3	Ashtari A, Sadegh Tabrizi J, Rezapour R, Rashidian Maleki M, Azami-Aghdash S.	A systemic review and Meta-analysis Study	2020	No Sampling	This study shows, the amount of waste produced, the cost of waste management, and overall waste management performance metrics were all significantly improved by interventions.
4	Neves, A.C., Maia, C.C., de Castro e Silva, M.E. <i>et al.</i>	A Comparative Study	2022	No sampling	This study provided valuable data on clinical waste management in hospitals,

					including waste generation, storage, treatment, and disposal practices. The findings revealed higher waste generation rates than previously reported, emphasizing the need for improved waste management planning and dimensioning.
5	Lohani N, Dixit S.	A descriptive study	2017	113	The study identified inconsistencies in biomedical waste management (BMWM) practices within the hospital, despite the presence of some good practices. These inconsistencies highlight the need

					for standardized and consistent protocols to ensure effective and safe BMWM. Addressing these inconsistencies is crucial for improving overall waste management practices and reducing potential risks to health and the environment.
6	Mitiku G, Admasie A, Birara A, Yalew W.	Institutional based cross-sectional study	2020	431	This study concludes that all private hospitals should acknowledge the health care workers who practiced good biomedical waste management.
7	Singh A, Singh N, Chellaiyan V, Martolia DS, Bedi RS, Mishra CM.	A cross-sectional study	2023	350	In this study Both undergraduate and graduate students were aware of biomedical waste,

					but they were far from experts in its management's finer points so it was advised to enhance their biomedical waste management procedures through regular training, ongoing monitoring, and feedback.
8	Sharma S, Deori TJ.	A cross-sectional study	2020	1st year post-graduate residents in a tertiary care hospital of Lucknow	The study found that residents had average knowledge about biomedical waste (BMW) management, legislation, and color coding. While residents showed a positive attitude towards BMW, their actual practices were only average. The review highlights

					the necessity of providing better education through well-designed seminars, programs, and workshops to enhance BMW management practices among residents.
9	D'souza B, Ms A, Johnson B.	Descriptive cross-sectional study	2016	Convenient sampling	The study explores the costs associated with biomedical waste management (BMW) and emphasizes the need for healthcare organizations to prioritize spending based on compliance requirements. Training played a crucial role in ensuring waste management compliance, but small healthcare organizations face challenges in conducting regular

					training due to limited resources and staff attrition. The review suggests organizing training sessions at the government level, such as taluka or district levels, to encourage the enrollment of staff from small healthcare organizations.
10	Rao JN, Gomes LA, Killedar M, Bahuguna J.	A Cross-Sectional Observational Study	2017	45	The study examined the knowledge and awareness of biomedical waste management among nursing students in a tertiary care teaching hospital in Karnataka, India. The results showed that the students possessed a high level of knowledge and perception

					regarding the practices of biomedical waste management. This suggests that the educational efforts in the institution have been successful in imparting the necessary understanding and awareness to nursing students.
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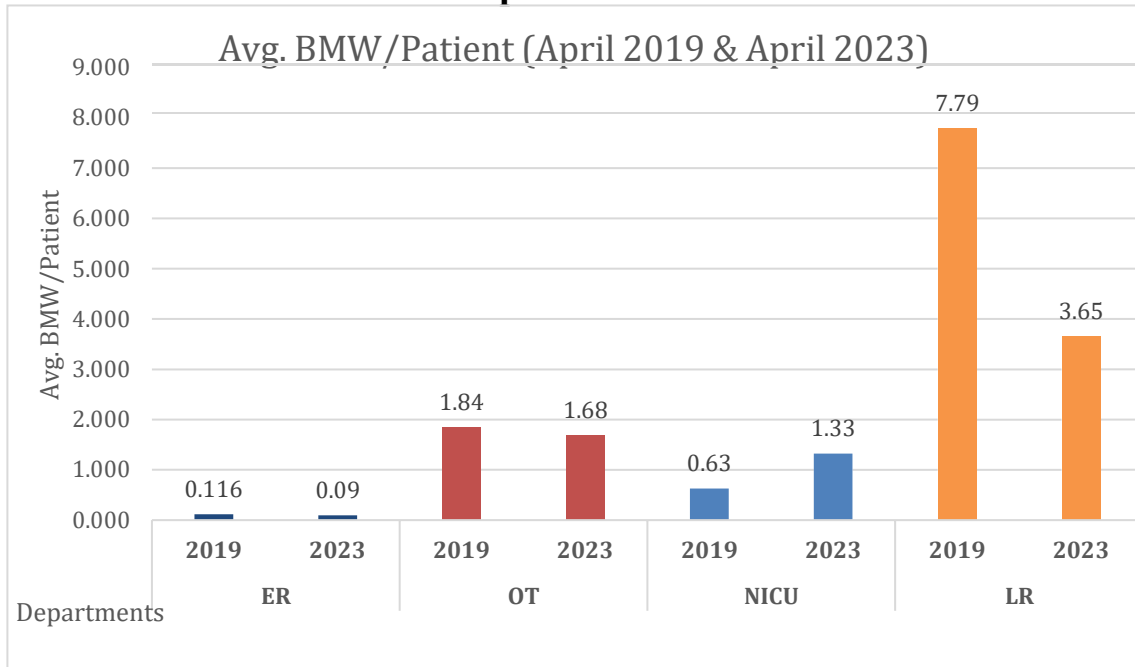
CHAPTER 3: METHODOLOGY

This is a Cross-Sectional Comparative study that was conducted between 13th March, 2023 to 13th May, 2023. This study was done to compare the Biomedical Waste Generation in the hospital in Emergency Department, NICU, Operation Theatre, and Labour Room between Apr - 19 and Apr – 23 and also to know the effect of the corrective measures which were taken post-Apr 19 by Thumbay Hospital, Fujairah for Biomedical Waste Management.

- **Study design:** A Cross-sectional Comparative study
- **Study setting:** Thumbay Hospital, Fujairah
- **Study period:** 2 months
- **Study participants:** Biomedical Waste Management Department, Infection Control Department, Quality Department, Housekeeping Department, CSSD Department, and Nursing Department will be the participants in this study.
- **Type of data:** Secondary data
- **Data analysis tool:** MS. Excel

CHAPTER 4: RESULTS

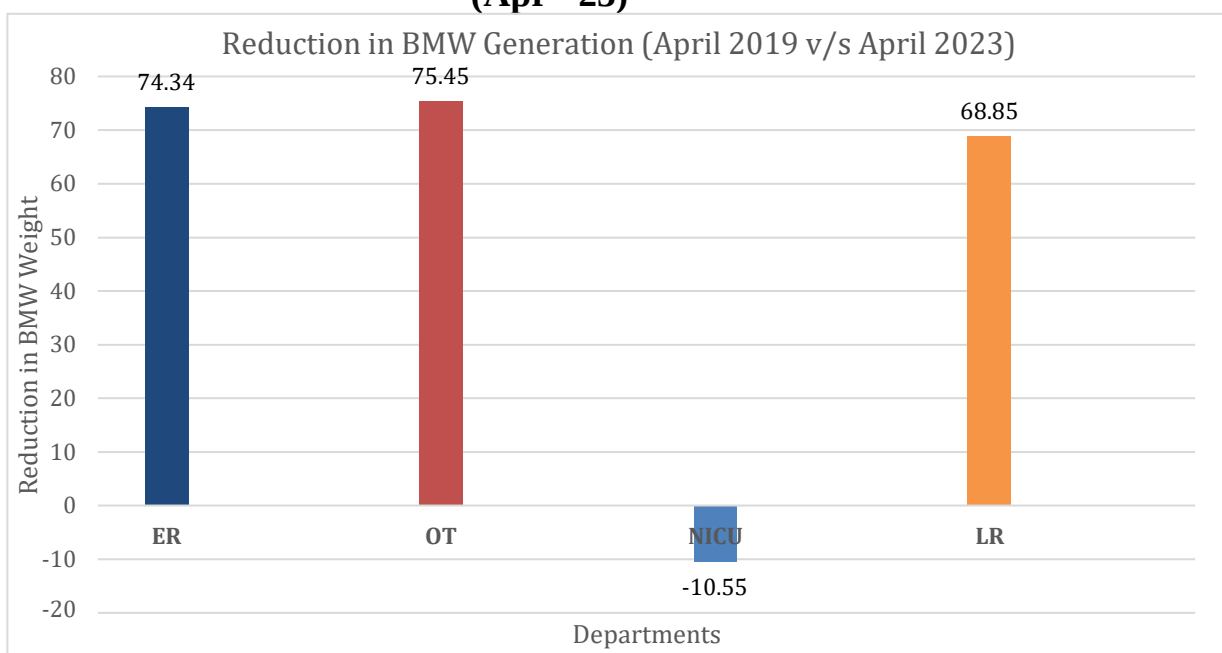
**Fig 1.1 Waste Generation April - 19 v/s
April - 23**



April	ER		OT		NICU		LR	
	2019	2023	2019	2023	2019	2023	2019	2023
Total BMW	370.6	296.26	209.7	134.25	12	22.55	109	40.15
Total Patients	3201	3121	114	80	19	17	14	11
Average BMW per patient	0.116	0.09	1.84	1.68	0.63	1.33	7.79	3.65
Average BMW per Day	12.35	9.88	6.99	4.475	0.40	0.75	3.63	1.34
	ER		OT		NICU		LR	
Diff. Total BMW/Month	74.34		75.45		-10.55		68.85	

As shown in the graph the waste generation in the emergency department on Apr - 19 is 0.116kg which is reduced to 0.09kg on Apr - 23, similarly in Operation Theatre & Labor Room the waste generated is 1.68kg and 3.65kg on Apr - 23 which is comparatively reduced as compared to Apr -19. When looking at NICU the waste generation was 0.63kg in Apr-19 which has got increased in Apr 23 to 3.65kg. And the patient counts in NICU for Apr - 19 was 19 and on Apr - 23 NICU patient count was 17.

**Fig 1.2 Reduction in Waste Generation
(Apr - 23)**



As shown in the graph the total waste generation in Emergency Department is 74.34kg on Apr 23 whereas in Operation Theatre the waste generation is 75.45 and in Labor Room, the waste generation is 68.85kg whereas in NICU the waste generation increased by -10.55kg.

CHAPTER: 5 DISCUSSION

This study focuses on the effectiveness of the corrective actions taken by Thumbay Hospital in Fujairah for biomedical waste management from April - 19 to April - 23.

1. Biomedical Waste Generation Comparison:

The comparison of biomedical waste generation between April - 19 and April - 23 revealed important insights. It was observed as per the results appeared after the analysis done department-wise waste generated per patient that there was a significant decrease in biomedical waste generation on Apr - 23 as compared to Apr -19 except for NICU. This decrease can be attributed to the implementation of corrective measures. The findings suggest that the hospital's efforts in waste reduction and management have been effective.

2. Effect of Corrective Measures:

The study examined the impact of the corrective measures implemented by Thumbay Hospital post-April - 19 for biomedical waste management. The results indicate a positive effect of these measures on waste generation. There was a significant reduction in waste generation on Apr - 23 in the Emergency Department, Operation Theatre, and Labour Room. The hospital's efforts in training staff, Ensuring the only required places for yellow bins are placed, Separating waste collection bags for Bottles (White bags), and Daily Rounds from ICN to check compliance, training Nurses on materials that must be discarded in the yellow bag, training for housekeeping staffs on waste segregation and labeling the yellow bag with location and weight. All these corrective measures have contributed to the overall effectiveness of the waste management process.

The discussion highlights the importance of continuous monitoring and evaluation of waste management practices to ensure sustained effectiveness. It also emphasizes the need for

ongoing training programs to keep the staff updated and informed about the best practices in biomedical waste management.

CHAPTER: 6 CONCLUSION

The study concludes that the corrective actions taken by Thumbay Hospital have resulted in a drop in the production of biomedical waste, allowing the process to be optimized. Numerous departments have also experienced major transformation, which has decreased costs.

In conclusion, this study aimed to compare biomedical waste generation in Thumbay Hospital, Fujairah between April - 19 and April - 23, and evaluate the effect of corrective measures implemented post April - 19 for biomedical waste management. The analysis revealed interesting findings regarding waste generation in different areas of the hospital.

Firstly, in the Labor Room, there was a notable reduction in waste generation from 7.79 kg per patient on April - 19 to 3.65 kg per patient in April - 2023, representing a significant 53.14% decrease. This reduction suggests that the corrective measures implemented by the hospital have effectively improved waste management practices in this area.

However, in the Neonatal Intensive Care Unit (NICU), there was an unexpected increase in waste generation from 0.63 kg per patient on April - 19 to 1.33 kg per patient on April - 23, indicating a significant 111.11% increase. Moreover, the analysis identified a significant increase of -10.55 kg in waste generation specifically in the NICU on April 23.

Based on these results, it is evident that the corrective measures taken post-April - 19 have had varying effects on waste generation in different areas of Thumbay Hospital. While the Labor Room demonstrated a considerable reduction in waste generation, there is a need to assess and address the factors contributing to the significant increase in waste generation in the NICU.

Further investigation is required to understand the underlying reasons for the observed trends in waste generation and to implement additional targeted measures to ensure effective biomedical waste management across all areas of the hospital. Continuous monitoring and

evaluation of waste management practices will be essential in maintaining a safe and environmentally friendly healthcare facility.

CHAPTER 7: RECOMMENDATIONS

1. Further investigation to understand the underlying reasons for the increase in waste generation in NICU.
2. Observe trends in waste generation and implement additional targeted measures to ensure effective biomedical waste management across all areas of the hospital.
3. Continuous monitoring and evaluation of waste management practices will be essential in maintaining a safe and environmentally friendly healthcare facility.

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