



Analysis MENSTRUAL WASTE MANAGEMENT SYSTEM IN MUMBAI: IDENTIFYING GAPS AND OPTIMIZING PRACTICES- A

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ABSTRACT:

Menstruation plays vital role in health and production of female life cycle. Women use various absorbent materials as menstrual hygiene product. Disposable Sanitary napkins are commonly used by women as menstrual hygiene products in Indian urban areas. Menstrual Waste Management has been created worrisome impact in sustainable development goals of almost all developing countries. Greater number of significant challenges is arisen in women's menstrual health and their associated environmental factors. This report represents the current menstrual waste management system in Mumbai city and suburbs and identifies the loopholes in the current systems to optimized practices required to manage and dispose menstrual waste effectively. Mumbai city is divided into 24 different wards to handle its administration effectively. We had visited solid waste management department in all the 24 ward to understand the solid waste management system and the ways to handle menstrual waste generated in Mumbai city and suburbs. Conducted personal interviews of Ass. Engineer solid waste management in the respective wards to collect the information. Menstrual waste is not properly disposed by citizens. The waste is not being collected and treated effectively due improper waste disposal practices. Most commonly used napkins are made up of synthetic material and difficult to degrade. As menstrual waste is a type of biomedical waste

Keywords:- Keywords: Menstrual waste Management, Sanitary Napkins, Period Pads, Menstrual Waste, menstrual waste disposals, BMC.

INTRODUCTION :

Menstruation is an inevitable aspect of a woman's life. Women are more likely to use disposable menstrual hygiene products. As more people realize that diapers and sanitary napkins are viable options for personal hygiene, the amount of trash generated by these products has increased. Synthetic plastics have recently been used as liquid absorbents to improve sanitary pads' functionality¹. These synthetic plastic materials are difficult to treat² as the used sanitary napkins are dumped with the rest of the household trash. The Domestic Waste is the mixture of different types of waste generated at house³ is the major part of Municipal Solid Waste generates in Mumbai. Mumbai's massive population poses a significant problem for the city's efforts to control its solid waste. According to 2018 estimates, after Delhi, Mumbai is India's second most populous city⁴. According to the

Brihanamumbai Municipal Corporation (BMC), the city generates about 7500 metric tons of garbage every day, or about 27.37 lakh metric tons annually⁴. According to a new study, India's landfills receive approximately 12.3 billion sanitary napkins and 113,000 tonnes of waste annually^{5, 6}. Various studies have suggested that a single disposable sanitary napkin contains plastic which takes up to 500 to 800 years to naturally decompose, making these napkins a serious environmental hazard⁷. Furthermore, these items contain blood and bodily fluids, which can spread dangerous infections if not properly sanitized to destroy pathogens⁸. Sanitary napkins & diaper waste are type of biomedical waste and must be disposed separately⁹. However, it is challenging to treat soiled sanitary napkins because they are typically thrown away with other household trash. Waste from feminine hygiene products can take

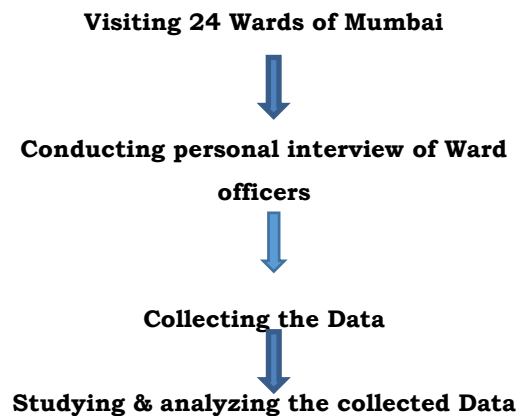
centuries to degrade when it is wrapped in plastic bags. This paper focuses on understanding the existing menstrual waste management practices in Mumbai and try to find the solutions to treat the waste effectively.

MATERIALS AND METHODS

This paper is based on primary data collected from 24 wards of Mumbai which comes under the BMC. The assistant Engineer solid waste management were interviewed to collect the information and understand the existing system of menstrual waste management in each of the wards.

Menstrual Waste Management Data

Collection



Questionnaire:

1. Total population of the ward
2. Total dry waste generated & collected in the ward.
3. Total wet waste generated & collected in the ward.
4. Total debris generated & collected in the ward.
5. Total Hazardous Waste generated & collected in the ward.
6. How the hazardous waste is treated after collection?

RESULTS AND DISCUSSION :

1. Wet waste is collected daily where as dry waste and hazardous waste is collected weekly.
2. Collected dry waste is brought to the respective ward segregation center and hazardous waste is separated from the dry waste if disposed as dry waste.
3. Collected hazardous waste is transferred weekly by one vehicle to incinerate at the incineration plant.
4. The volume of collected Wet waste is the greatest, whereas the volume of collected Hazardous waste is the smallest.

- Assuming only 10% menstruating females are using disposable sanitary napkins. So Number of females using disposable menstrual products are = **337260**.
- Considering a female uses 8 pads on an average in one menstruation cycle. Each pad is of approximate 5 to 10 gm before using it. So here we can assume that every female is producing 500 gm menstrual waste per month , the total volume will be as follows:-

$$337260 \times 0.5 = 168630 \text{ MT/ Month}$$

- The graph of waste collection from all the wards also highlights the collection volume of the Hazardous waste is very less which included all type of Hazardous waste.

Based on the calculations using population data, it is estimated that approximately 168,630 metric tons of menstrual waste should be generated per month in Mumbai. However, the current collection and treatment system only manages to collect and treat around 17.5 metric tons per month, leaving a vast amount of waste untreated. These findings highlight the urgent need for improved menstrual waste management practices in Mumbai. Proper segregation, collection, and

treatment of menstrual waste should be implemented to ensure environmental sustainability and the protection of public health.

CONCLUSION:

In conclusion, the study highlights the urgent need for improved menstrual waste management practices in Mumbai. The findings indicate that the existing system is inadequate and inefficient, leading to a significant amount of untreated waste. The estimated volume of menstrual waste generated is much higher than what is being collected and treated.

Proper disposal of menstrual waste is crucial to address the environmental hazards posed by disposable sanitary napkins, which contain non-biodegradable synthetic plastics. Additionally, the presence of blood and bodily fluids in these waste products can pose health risks if not properly sanitized.

To address this issue, awareness programs should be conducted to educate women about the proper disposal procedures for menstrual waste. Women should be encouraged to use reusable menstrual products as a sustainable alternative. These measures will help reduce the volume of waste generated and minimize the environmental impact.

Collaboration between government bodies, waste management agencies, NGOs, and women's organizations is essential to implement effective menstrual waste management strategies. Separate collection and treatment systems should be established for menstrual waste, ensuring its proper disposal and treatment.

By implementing these solutions, Mumbai can significantly improve its menstrual waste management practices, reduce environmental pollution, and protect public health. It is crucial to prioritize this issue and work towards creating a cleaner and more sustainable environment for all.

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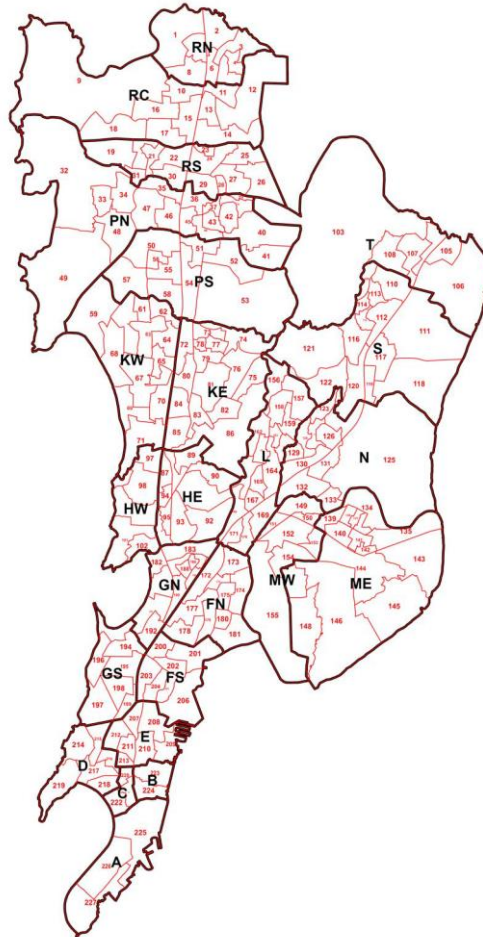
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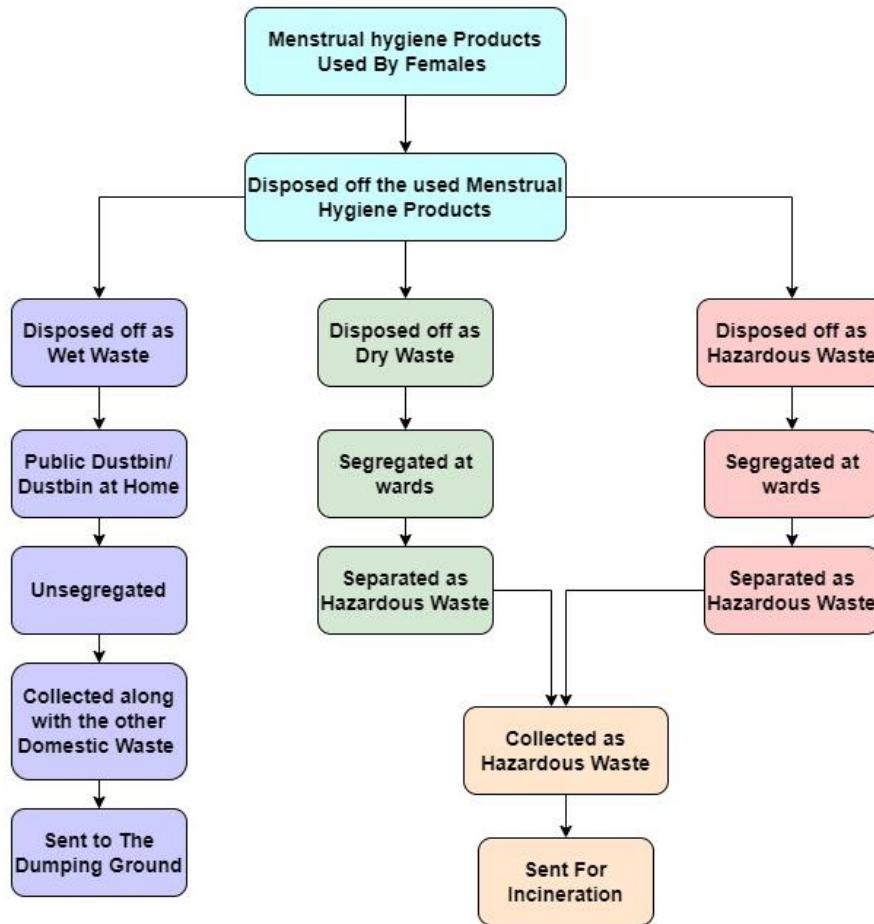


Map of Mumbai and its division in 24 wards¹⁰

Data Collected from the Wards of Mumbai:

Sr. No.	Ward Name	Location	Total Population	Amount of Waste Collected				
				Dry MT/ Month	Wet MT/ Month	Debris MT/ Month	Hazardous Waste MT /Month	Total MT/ Month
1	A	Colaba	2,10,000	990	6300	0	0.5	7290.5
2	B	Sanhurst Road	228,000	750	2910	0	0.5	3660.5
3	C	Marine lines	1,67,568	240	3960	0	0.5	4200.5
4	D	Grant road	1,05,617	234	481.2	0	0.5	715.7
5	E	Byculla	4,42,000	3450	8370	1350	0.5	13170.5
6	F South	Parel	3,60,972	690	4470	900	0.5	6060.5
7	F North	Matunga	5,28,767	96	7410	1200	0.5	8706.5
8	G South	Prabha Devi	4,52,000	90	5670	120	0.5	5880.5
9	G North	Dadar	9,00,000	93	13680	1800	0.5	15573.5
10	H East	Khar / Santacruz	5,79,123	255	8040	1365	0.5	9660.5
11	H West	Bandra	3,50,000	456	7500	1200	0.5	9156.5
12	K East	Andheri East	10,00,000	300	13800	15060	0.5	29160.5
13	K West	Andheri West	7,18,000	750	12000	1800	0.5	14550.5
14	L	Kurla	8,45,500	240	14670	3750	6	18666
15	M East	Chembur East	8,06,433	210	11520	3000	0.5	14730.5
16	M West	Chembur West	4,29,775	120	6300	2520	0.5	8940.5
17	N	Ghatkopar	6,50,000	600	6600	0	0.5	7200.5
18	P South	Goregaon	4,61,304	126	8100	1800	0.5	10026.+5
19	P North	Malad	9,67,784	720	12450	900	0.5	14070.5
20	R South	Kandivali	12,51,998	420	7500	600	0.5	8520.5
21	R Central	Borivali West	1,67,568	300	7500	600	0.5	8400.5
22	R North	Dahisar	5,50,000	240	4800	300	0.5	5340.5
23	S	Bhandup	9,00,000	360	8400	2250	0.5	11010.5
24	T	Mulund	4,18,000	360	4650	660	0.5	5670.5
Total			1,34,90,409	12090	187081.2	41175	17.5	240363.7

Menstrual Waste Disposal Practices in Mumbai



Waste Collection In Mumbai Wards

