

Characterization of Bio-Medical Waste in Kalaburagi City

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ABSTRACT

The waste generated in healthcare units and hospital are refer to as Bio- Medical waste it includes waste from operation theatres, surgical waste, syringes, needles, cotton pieces for dressings etc. in the presence study ESIC hospital, Jayadeva Hospital GIMS Hospital. Has been considered as study area in order to characterize the bio-medical waste. To conducted in hospital to quantify the waste, segregate the waste as Red, Yellow, Blue, White. To study the method of handling and ultimate disposal of waste. The study is conducted for three months in 3 hospitals (May, June July) during this period the average quantity of red, yellow, blue, white in ESIC Hospital in 71.51%, 41.13%, 24.73%, 2.08%. Jayadeva Hospital in 30.51%, 14.63% 6.23%, 6.4%. GIMS Hospital in 23.06%, 14.41%, 6.87%, 1.47%. The waste generated in three Hospital in ESIC Hospital in 140-160kg/day in red category, 90-110kg/day in yellow category, 70-90 kg/ day in blue category, 10-15 kg/day in white category. Jayadeva Hospital in 60-80 kg/day in red category, 30-40 kg/day in yellow category, 20-30 kg/day in blue category, 3-5 kg/day in white category. GIMS Hospital in 50-60 kg/day in red category, 40-50 kg/day in yellow category, 30-40 kg/day in blue category, 5-10 kg/day in white category. It is observed that health care, housekeeping personal were not effectively using personal protective wears.

Key word: Hospital Waste, Environment, Hazards Waste Management.

1. INTRODUCTION

Hospital waste is defined as hazards or non-Hazards waste is generating the treatment, diagnosis, and immunization. Hospital waste generating all waste in Hazards and Non-Hazards waste in hospital the risks are not only handling the waste generating in environmental effects, Land pollution, Radioactive effluent, Water pollution, Indoor and outdoor air pollution. The waste management option efficient to need, safe disposal and environment friendly to protect the Human and animal from voluntary and accidental cases waste when collecting, segregation, treatment and disposal of waste.

A. Objectives

- To collect data about BMW Generation, rate of various sources in Kalaburagi.
- To identify the collection, processing, and disposal method adopted at sources.

2. STUDY AREA

The study was carried out in three selected hospitals in Kalaburagi city. The Kalaburagi city lies between 17.32°Latitude and 76.85°E Longitude with the elevation about 750m above MSL. It is among the Kalaburagi City with the population of 533587 according to 2011 census.

It is situated at a distance of 623km from state capital Bangalore, the average rainfall is 737.25mm, the average maximum and temperature recorded are 45.6°C Respectively.



Fig. 1. Location map of Kalaburagi city

3. METHOD AND MATERIALS

Place of Study: The study was carried out in 3 selected Government Hospital in Kalaburagi City.

Duration of study: the study carried on duration from May 2025 to July 2025.

Method of Collecting data Technique: the various like ESIC Hospital, Jayadeva Hospital. GIMS Hospital in Kalaburagi city. Total number of waste generating was studied for a period of 3 months that is May, June, July 2025. Total number waste generation in Hazards and Non-Hazards waste in 3 selected Hospital were determined by collecting and weighing using calibrated machine. The weight of waste was documented in the paper by rounding off to the nearest zero value.



Fig 2. Front view of the GIMS Hospital



Fig 3. Front view of the Jayadeva Hospital



Fig 4. Front view of the ESIC Hospital Kalaburagi

Table 1: Information related to hospital in Kalaburagi City

Sl.no	Name of Hospital	Types of Hospital	Bed Capacity	Waste Generation During Three Months
1	ESIC Hospital Kalaburagi	Govt Hospital	1100 Bed	13591.5
2	Jayadeva Hospital Kalaburagi	Govt Hospital	371 Bed	5201
3	GIMS Hospital Kalaburagi	Govt Hospital	750 Bed	4581

4. RESULTS AND DISCUSSION

ESIC HOSPITAL KALABURAGI

Table 2: Total Quantities of Bio Medical wastes in May to July Month

Month	Red	Yellow	Blue	White
May	2297.5	1324.5	847.5	64.5
June	2391	1387.5	804.5	71
July	2468.5	1401.5	821	72.5
Total	7157	4113.5	2473	208

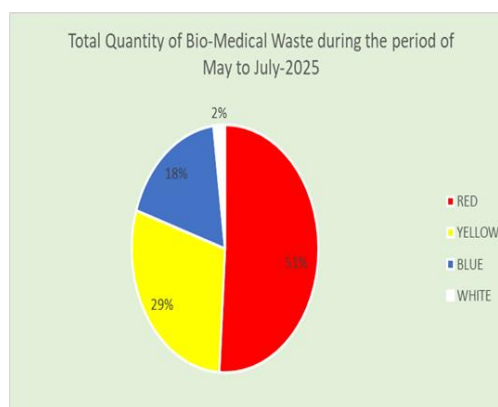
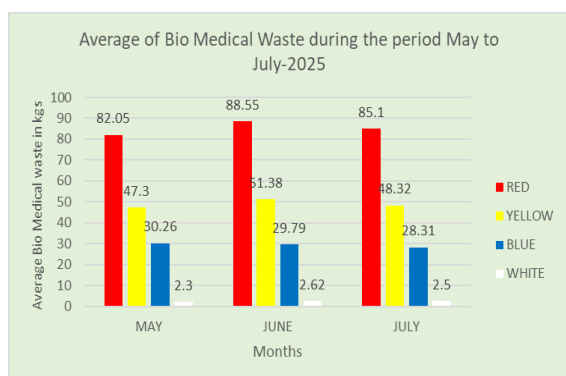


Chart 1: Average Bio Medical Waste in Hospital

Chart2: Percentage of Bio Medical Waste

JAYADEVA HOSPITAL KALABURAGI

Table 3: Total Quantities of Bio Medical Waste in May to July Months

Months	Red	Yellow	Blue	White
May	939	501	192	19
June	1044	448	247	23
July	1068	514	184	22
Total	3051	1463	623	64

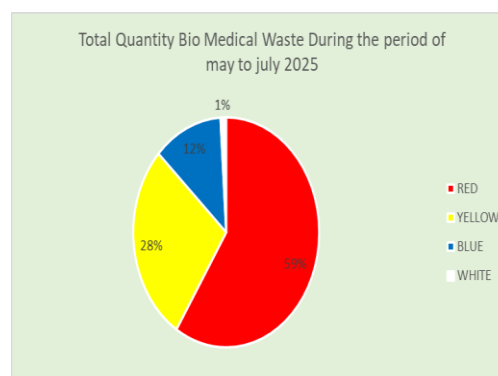
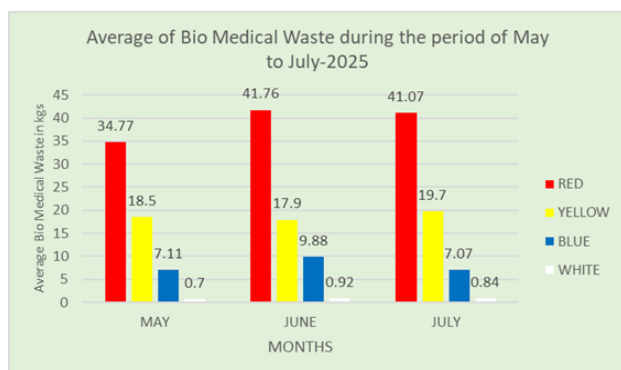


Chart 3: Average Bio Medical Waste in Hospital

Chart 4: Percentage of Bio Medical waste

GIMS HOSPITAL KALABURAGI

Table 4: Total Quantities of Bio Medical Waste in May to July Months

Months	Red	Yellow	Blue	White
May	615	439	118	40
June	887	543	263	56
July	804	459	306	51
Total	2306	1441	687	147

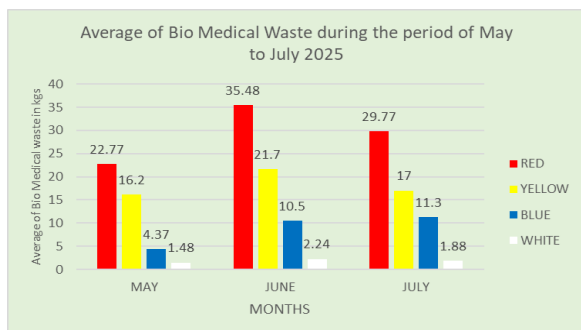


Chart 5: Average Bio Medical Waste in Hospital

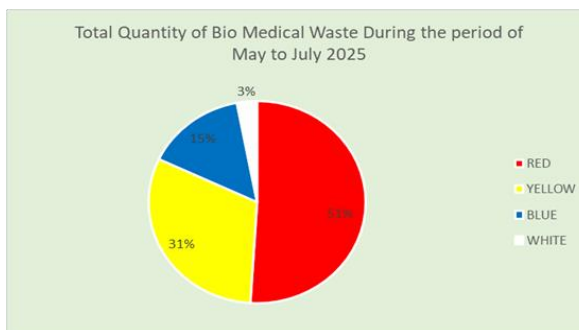


Chart 6: Percentage of Bio Medical Waste

Table 5: Average Bio Medical Waste Generating in 3 Hospital (Kg/day)

Sl.no	Months	ESIC Hospital	Jayadeva Hospital	GIMS Hospital
1	May	4534	1651	1212
2	June	4654	1762	1749
3	July	4763.5	1788	1620
4	Total	13951.5	5201	4581
5	Mean	4650.5	1733.6	1527

The data on the hospital in each bed capacity hospital was obtained from the hospital records that is 1100 Bed at ESIC Hospital, 371 Bed at Jayadeva Hospital, GIMS Hospital 750 Bed in this colour coding for this 3 Hospital in types of waste suggested disposal method. The average quantity of Bio Medical waste generating in per day per month of May was observed to be 4534 kg in ESIC Hospital, 1651 kg in Jayadeva Hospital, 1212 in GIMS Hospital in June, the total quantity of bio medical waste generating per June month was 4654 kg in ESIC Hospital, 1762 kg in Jayadeva Hospital, 1749 in GIMS Hospital. July was observed to be 4763.5 kg in ESIC Hospital, 1788 kg in Jayadeva Hospital, 1620 in GIMS Hospital. Selected in three hospitals in ESIC Hospital, Jayadeva Hospital, GIMS Hospital in calculated as 4650.5kg, 1733.6kg, 1527 respectively.

The average biomedical waste generating from 3 selected Hospital in colour coding bag was also in each of the three months from May to July 2025. The average bio medical waste in red, yellow, blue, white bag during the May to July month for ESIC Hospitals was 7157kg, 4113.5kg, 2473kg, 208kg. Jayadeva Hospital was, yellow, blue white in during the May to July Month 3051kg, 1463kg, 623kg, 64kg. GIMS Hospital was yellow, blue white in during the May to July Month 2306, 1441, 687, 147. per day respectively. Total Biomedical waste generating per day and per month in May to July in individual Colour coding bag in 3 selected in Hospital in Kalaburagi city.

5. CONCLUSION

Bio Medical waste in Hospital of Kalaburagi City it was found that biomedical waste management in 3 Selected in Government Hospital in Kalaburagi city and it is observed in lack of awareness and improper bio medical in healthcare centre to establishment in general health centre and environmental condition the required in handling, collection, segregation, offsite and onsite transportation, Treatment and Disposal proper method to minimizing

risk of health in Hazards. The biomedical waste in lesser burden on waste disposal in hospital, Cost Effective waste disposal in necessary Hence hospital should provider waste generating in per day and month in hospital.

6. REFERENCE

1. Anonymous. Ban of plastic waste at educational institutes. PTI, New Delhi. Prajavani,2018;5.
2. Acharya, Dr & Gokhale, Dr & Joshi, Deepa. (2014). Impact of Bio Medical waste on city Environmental: Case study of Pune, India. IOSR Journal of Applied chemistry. vol 6 issue 6.pp 21-27.
3. Bio-Medical waste (Management and Handling) Rules,1998
4. Datta P, Mohi GK, Chander J (2018) Biomedical waste management in india: Critical appraisal Lab Physicians 10 (1): 6-14.
5. Safe management of waste from health care activities. WHO, Geneva; 1999.
6. Sharma AK. Bio Medical waste (management and Handling) Rules. Bhopal: Suvidha Law House; 1998.7. Sikka, Saurabh. Bio Medical waste in Indian Context. B-6/15 Rajouri Garden, New Delhi.110 027,India,2000.
7. National Guideline for infection prevention and Control in Healthcare Facilities MoHFW, jan 2020.
8. Sastry AS, Bhat S. Essential of Medical microbiology. 1st ed. Jaypee Brothers Medical Publisher, Ansari Road New Delhi. 2016; 612-614.