



## Water Quality Standards and Guidelines for Water Discharges

JSS Academy of Higher Education & Research (JSS AHER) is committed to maintaining the highest environmental stewardship standards to protect land and water ecosystems. The institution recognizes that poor-quality water discharge can severely impact biodiversity, soil health, public health, and surrounding natural ecosystems. To address this, **JSS AHER has established clearly defined water quality standards, treatment mechanisms, monitoring systems, and sustainable management practices** to ensure that all wastewater and effluents released from its campuses meet regulatory and ecological safety norms.

The institution's water discharge practices strictly comply with **local and national pollution control norms** and are aligned with the **Sustainable Development Goals (SDG 6 – Clean Water & Sanitation and SDG 15 – Life on Land)**.

### 1. Institutional Water Quality Standards and Compliance

JSS AHER follows defined water quality parameters for discharged water, in accordance with:

- Central Pollution Control Board (CPCB) standards
- State Pollution Control Board guidelines
- Municipal corporation norms
- National Environmental Engineering Research Institute (NEERI) recommendations

Water discharge from hostels, hospitals, laboratories, academic blocks and residential areas is subject to monitoring for:

- pH levels
- Biochemical Oxygen Demand (BOD)
- Chemical Oxygen Demand (COD)
- Total Suspended Solids (TSS)
- Oil and grease
- Microbial load

**All treated water is tested and maintained within permissible limits before reuse or discharge**, thereby protecting:

- Nearby land ecosystems
- Microbial and plant biodiversity
- Soil quality
- Groundwater purity

## 2. Sewage Treatment Plants (STPs) & Effluent Treatment Mechanisms

JSS AHER has installed **Sewage Treatment Plants (STPs)** across its campuses which play a key role in ensuring water quality.

### Key initiatives:

- All wastewater from hostels, academic blocks, hospital buildings, cafeterias and staff residences is **collected and treated through STPs**
- Treated water is **not released into natural water bodies**
- Instead, it is safely **reused for:**
  - Landscaping
  - Gardening
  - Green belt development
  - Campus cleaning
  - Irrigation of non-edible plants

This circular reuse significantly reduces environmental contamination and prevents soil and ecosystem degradation.

## 3. Protection of Soil & Land Ecosystems

Proper water quality management ensures:

No contaminated water enters the soil

No impact on surrounding agricultural or green land

No harmful chemicals leach into groundwater

No disruption of soil microbial biodiversity

Treated water is used in green zones designed to:

- Improve soil moisture without toxicity
- Enhance vegetation cover
- Prevent soil erosion
- Improve microclimatic conditions on campus

#### **4. Biomedical and Laboratory Wastewater Management**

Special care is taken for:

- Laboratories (pharmaceutical, chemical, biomedical)
- Hospital effluents
- Research facilities

Measures include:

- Separate drainage for hazardous and non-hazardous waste streams
- Neutralisation of harmful chemicals before treatment
- No direct discharge into drains, lakes or open land
- Strict adherence to biomedical waste handling protocols

**These practices protect wildlife, micro-organisms and surrounding ecosystems.**

#### **5. Sustainable Linked Practices Supporting Water Quality**

JSS AHER integrates water management with waste and sustainability measures such as:

- **Biogas plants (200 kg at JSS MI & 50 kg at JSSCPM)** to reduce wet organic waste entering water systems
- Segregation of food/kitchen waste to avoid clogging and contamination of sewage lines
- Rainwater harvesting systems to maintain natural groundwater recharge
- Reduced use of chemical pesticides and fertilizers on campus landscaping areas
- Promotion of native plant species that require minimal water and chemical input

These actions **prevent contamination of discharged water and enhance ecosystem protection.**

#### **6. Awareness and Capacity Building**

JSS AHER also conducts awareness programs for students, staff and local communities on:

- Sustainable water management
- Safe waste disposal
- Environmental conservation
- Water quality and public health linkages

These are integrated into:

- Curriculum (Environmental studies, Public health, Pharmacy, Medical, Life sciences)
- NSS, NCC & outreach activities
- World Environment Day, World Water Day, and SDG campaigns

#### **7. Monitoring & Governance**

Monitoring is carried out by:

- Estate and Engineering Department
- Health & Safety Committees

- Environmental and Sustainability Cell
- Institutional Green Campus Committees

Regular inspections ensure:

- STPs function effectively
- No bypass or illegal discharge occurs
- Discharge quality remains within permissible limits

Any deviation is immediately corrected with **preventive and corrective measures**.

## Conclusion

JSS Academy of Higher Education & Research has a **robust, well-defined and effectively implemented water quality management system** to ensure that **all water discharges meet high environmental and public health standards**. By integrating advanced treatment systems, sustainable reuse, strict monitoring, ecological landscape management and consistent awareness, JSS AHER actively protects:

- Land ecosystems
- Soil health
- Groundwater quality
- Wildlife habitats
- Human health and welfare

These practices strongly support national environmental goals and the global targets of **SDG 6 and SDG 15 – Life on Land**.

## Evidence:

### SUSTAINABLE WATER EXTRACTION TECHNOLOGY

#### RAINWATER HARVESTING

- Rainwater harvesting collection tank of 30,000 liters storage capacity.
- 10 no's of Groundwater & bore well recharge pits and infiltration tank of about 15,000 liters capacity.
- STP of 25 KLD capacity by using SWR technology has been installed for treating sewage & kitchen wastewater of PG Guest Hostel & the treated water is used for the gardening area developed surrounding the building.
- One tank of 10,000 liters capacity is made for reuse of RO rejected water for gardening purposes
- Water sprinklers are in place



**RAINWATER HARVESTING COLLECTION (SUMP)**

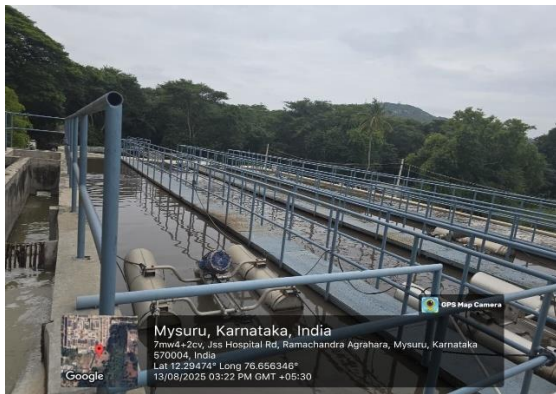


**STORM WATER DETENTION POND**





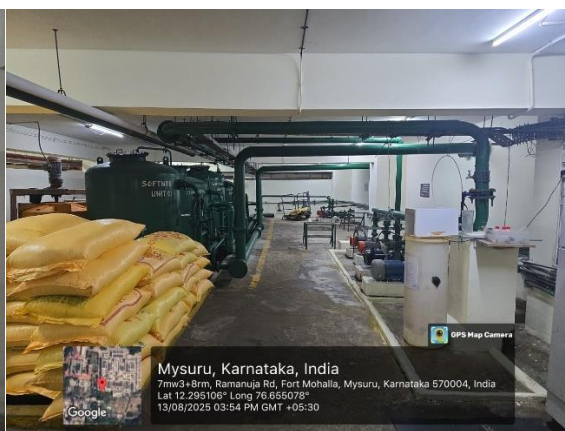
## SEWAGE TREATMENT PLANT



## SECONDARY CLARIFIER



## WATER TREATMENT PLANT





Facility for Reverse Osmosis (RO)



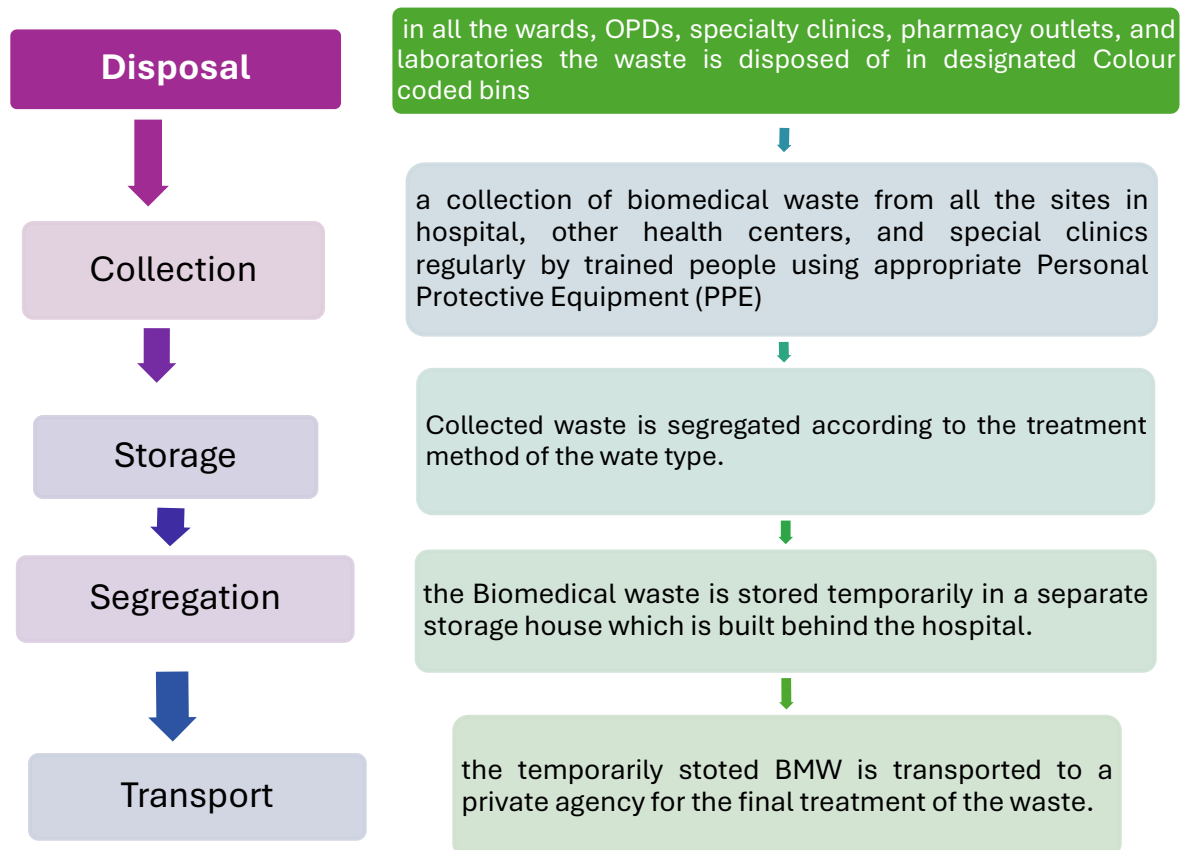
## SANITATION & HYGIENE

### WASTE MANAGEMENT & POLICIES OF JSS MEDICAL COLLEGE SUPPORTING SDG 6

#### a. Biomedical waste management

Biomedical waste management in the JSS hospital, Medical College, and allied health centers follows the Biomedical Waste Management Rules 2016.

Generated Biomedical waste in health centers follows the following step before it is treated.



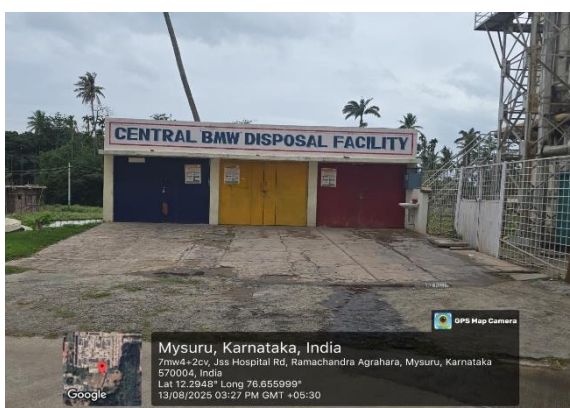
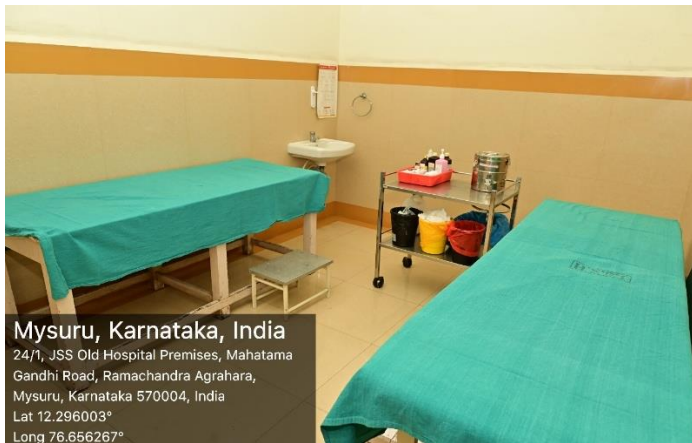
The BMW waste treatment services are availed from a private agency M/s. Shree Consultants since 2003. The JSS Hospital website displays month-wise how much BMW is generated from the hospital.



## BIOMEDICAL WASTE DISPOSAL SIGNAGE



## DISPOSAL BINS IN PROCEDURE ROOM



### b. General waste

- Segregation and collection of dry and wet garbage are in practice.
- Color-coded dustbins are provided across the campus.
- Waste collection by municipal lorries regularly from all the sites.

- Swachh Sarvekshan posters are put up in various places in the hospital, medical college, and hostel premises.

## BIOMEDICAL WASTE DISPOSAL BINS (Color-coded dustbins and covers Display of waste categories to the respective bins)



Separate colour-coded dustbins for wet and dry waste



Sign-board with instructions on using dustbin



### Swachhata Pledge: at hostel premises

#### c. Sanitary napkin disposal

At the girl's hostels of JSS Medical College, there is provision for safe disposal and treatment of sanitary napkins. Installed sanitary napkin incinerator in the hostels.



### Sanitary napkin Incinerator

#### d. Liquid waste from laboratories.

The liquid waste generated from the clinical laboratories is disposed of safely by the hospital. there is an Effluent Treatment Plant (ETP) in the hospital to make wastewater from the hospital safe to dispose of in the general drainage system.

## Focus on Postgraduate students

- i. **Water Surveillance:** the MD Postgraduates, Master in Public Health (MPH), and MSc Microbiology students are trained in regular water surveillance for detection of

water quality assessment, fecal contamination of water, chlorine content, chlorine demand etc.

- ii. **Outbreak investigation:** investigation and reporting of water borne disease outbreaks, i.e. Typhoid, GE, etc is taught to the Community Medicine and Public Health post graduates.
- iii. **Stool examination:** the postgraduates are taught and assessed about stool examination techniques to identify the ova and cyst in the stool.

## OUTREACH ACTIVITIES

### 1. Swachhata Hi Seva – 09-10-2024

NSS organized a Swachh Bharat cleanliness drive, aimed at promoting hygiene and environmental awareness with the students at JSS Medical College on October 9, 2024. The event commenced at 6:30 AM and witnessed enthusiastic participation from 30 students, who were eager to contribute to this noble cause.

Equipped with T-shirts, caps, and gloves provided by the college, the participants gathered behind the college premises, extremely enthusiastic. Under the guidance of esteemed faculty members - Dr.Manu G, Mr.Manjunath and Mr.Venkatesh, the students divided into groups, efficiently cleaning the area. The enthusiasm was palpable as everyone worked together, fostering a sense of teamwork and responsibility towards the environment.

Throughout the morning, the students collected and filled numerous garbage bags, clearing the area of plastic waste, wrappers, and other debris within the JSS Hostel campus and also outside the campus. This hands-on experience not only enhanced the students' understanding of the importance of cleanliness but also highlighted the significant impact collective action can have on maintaining a sustainable environment.

The drive concluded with a brief reflection session, where participants shared their experiences and discussed the need for continued efforts in promoting cleanliness. This initiative by NSS aligns with the broader goals of the Swachh Bharat mission, inspiring future generations to prioritize cleanliness and environmental stewardship. The event was a resounding success, leaving a lasting impression on both the students and the community.





## 2. NSS – Swachh Bharath Abhiyan 2025 – 04-03-2025

NSS conducted a Swachh Bharat Abhiyan on March 4, 2025, with the goal of raising awareness of environmental issues and hygiene among JSS Medical College students. 55 students enthusiastically participated in the event, which started at 7:30 AM, and were keen to support this admirable cause.

The students cleared the area of plastic waste, wrappers, and other litter throughout the morning by gathering and filling a large number of rubbish bags. The students' comprehension of the value of cleanliness was improved by this practical experience, which also demonstrated the enormous influence that group efforts can have on preserving a sustainable environment. The gathered waste were collected by the Mysuru City Corporation vehicle.



## 3. Swacchaththa Sarvekshan 2024, Kukkarahalli lake Swacchaththa Abhiyan on 16-02-2025

JSS Medical College NSS wing participated in Swacchaththa Sarvekshan 2024, Kukkarahalli lake. Swacchaththa Abhiyan conducted by Mysuru City Corporation on 16/02/2025 starting from Kuvempu Vana, Railway front gate, Mysuru.

The event commenced at 7:00 AM and witnessed enthusiastic participation from 25 students including MBBS and BSc students, who were eager to contribute to this noble cause.

The students collected and filled numerous garbage bags, clearing the area of plastic waste, wrappers, and other debris throughout the morning. This hands-on experience not only enhanced the students' understanding of the importance of cleanliness but also highlighted the significant impact collective action can have



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ದೇಶದ ಸ್ವಚ್ಛ ನಗರ

**ಸ್ವಚ್ಛ ಸರ್ವೇಕ್ಷಣೆ 2024**  
**ಕುಕ್ಕರಳ್ಳಿ ಕೆರೆ ಸ್ವಚ್ಛತಾ ಅಭಿಯಾನ**

ದಿನಾಂಕ : 16-02-2025 ರಂದು ಬ್ರಾಮವಾರ ಬೆಳಿಗ್ಗೆ 7 ರಿಂದ 8 ರವರೆಗೆ  
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#### 4. Dengue Awareness – 23-07-2024 (CM – UHC)

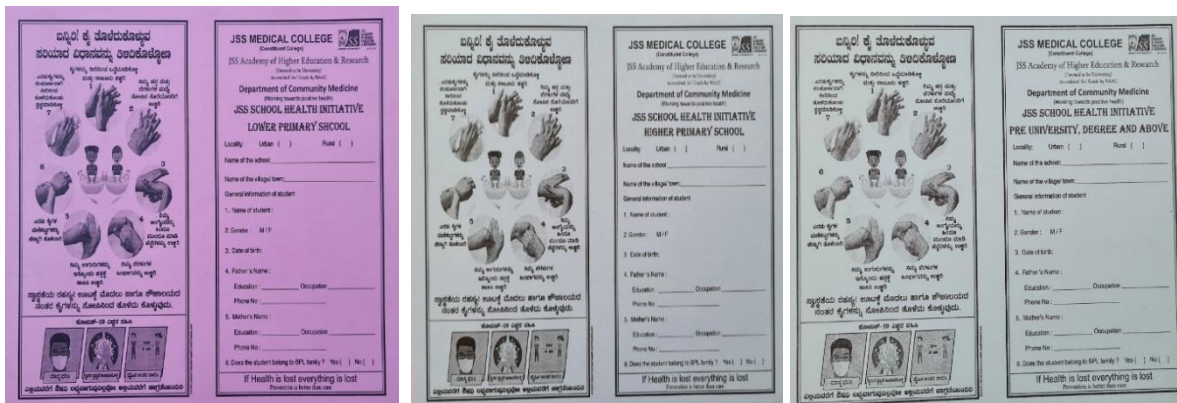
JSS Jan Shikshan Sansthan Mysore, Karnataka and JSS Urban Health Centre, Department of community medicine had organized program at JSS urban health centre on 23/07/2024 on on dengue and malaria awareness-causes,mode of spread and preventive measures.Also about personal hygiene and cleanliness by Dr.H.V Rama, LMO JSS UHC under swachhata pakhwada program.

The program was inaugurated by chief guest Sri.Nagaraju, Subject expert, school education department, JSS mahavidyapeeda. Sri.Ramesh, director JSS Jan Shikshan sansthan, Smt.Sowbhagya, program officer JSS Jan Shikshan Sansthan were present. JSS Medical college and Dental college interns, staff of JSS Jan Shikshan Sansthan, 30 women beneficiaries, staffs of JSS UHC attended the program. The program was compered by Santosh.H.B., Health inspector, JSS UHC.



#### School Health Appraisal program

- Every year around 12,000-15,000 school and college students' health appraisal is conducted by the Department of Community Medicine, JSS Medical College. During this appraisal program, there are separate health cards for primary school, middle and high school, and college students. These health cards also depict the pictorial message about hand washing techniques and personal hygiene methods.
- The students are also educated about personal hygiene, menstrual hygiene, and environmental hygiene (school & domestic).



Handwashing picture is depicted in School Health Appraisal cards

- In the schools along with health check up, children were educated about hand washing technique and importance of hand hygiene.

## RESEARCH

Efforts are underway through involvement of students and faculty in carrying out various research projects towards contributing to Water and Sanitation goal.

1.

### Publications

Thippeswamy H M,  
Prashanth S N,  
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Nanditha Kumar M, P  
Smitha, Comparison of  
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alkaline phosphatase, and  
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fluoride drinking water,  
Scientific Reports, 2025  
Mar;15(1).

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Kakoli Banerjee, Pradeep  
Kumar, Ajay Kumar, Kamal  
Upreti, Shubham Mahajan,  
Mohammad Shahnawaz  
Nasir, Computation of  
Water Quality Index and  
Its Estimation Using  
Machine Learning  
Techniques, Research  
square, 2025 Jan.

Dr Seema Deshmukh,  
Adithya Mahesh,  
Sreejeeta Dey, Impact  
of Augmented Reality  
Guided Toothbrushing  
on Oral Hygiene  
Parameters Among 6 –  
8 Years-old Children: A  
Pilot Trial, Pesquisa  
Brasileira em  
Odontopediatria e  
Clinica Integrada,  
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Shashwath,  
Deepashree  
Rajashekar, Sujatha  
Shimoga Ravi Kumar,  
Satyasai Badveti,  
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Interventional Strategy  
to Increase Hand  
Hygiene Compliance in  
Intensive Care Unit of a  
Tertiary Care Hospital  
in South India, Indian  
Journal of Public

Priyadarshi K,  
Dhandapani S,  
Vinothini A B,  
Punnen S A,  
Sastry A S,  
Rajshekar D,  
Specialty-specific  
hand hygiene  
compliance: 5-year  
study from a large  
public sector  
teaching hospital,  
South India,  
Indian Journal of  
Microbiology  
Research, 2024  
Sep;11(4):291-296.

## 2. Projects and collaborations, guest lectures and Presentations undertaken related to SDG 6

### Research Projects and collaboration

Ongoing research on the Evaluation & comparison of serum calcium, Magnesium, Phosphate, Alkaline Phosphatase, Vitamin-D, and Bone Mineral Density in children consuming reverse osmosis (RO), Non-RO and High Fluoride drinking water by Dr. Devananda D. Paediatrics, JSSMC in collaboration with JSS Dental College, funded by ICMR. Funding amount of 20.41 lakh, for 2 yrs from Dec 2022

### Guest Lectures

A guest Lecture on Biomedical Waste Management by Dr Preethika Ravion 10<sup>th</sup> July 2024 at JSS Nursing College

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A guest Lecture on Menstrual health and hygiene by Dr. Vyshali R on 19<sup>th</sup> February 2025 at Nataraja College Mysuru

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A guest Lecture on Menstrual health and hygiene by Dr. Sowmya K on 18<sup>th</sup> May 2025 at University of Mysuru

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A guest Lecture on Cleanliness, Health and Infectious Diseases by Dr. Shilpa Avarebeel on 23<sup>rd</sup> March-2025 at Suttur, Mysuru

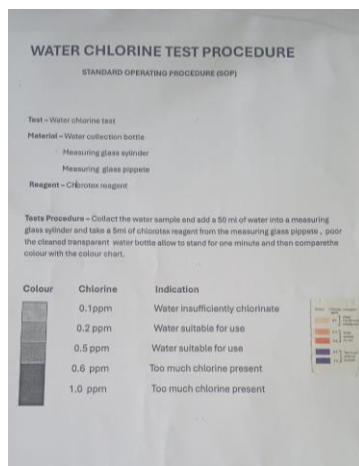
### Presentations in Conference

Dr. Kavya G Upadhya presented a paper on Oral Health status and the associated oral Hygiene practices among the adult population of South India : An exploratory study at IAPSM National conference held at Srinagar, J & K between 11-13th April 2025

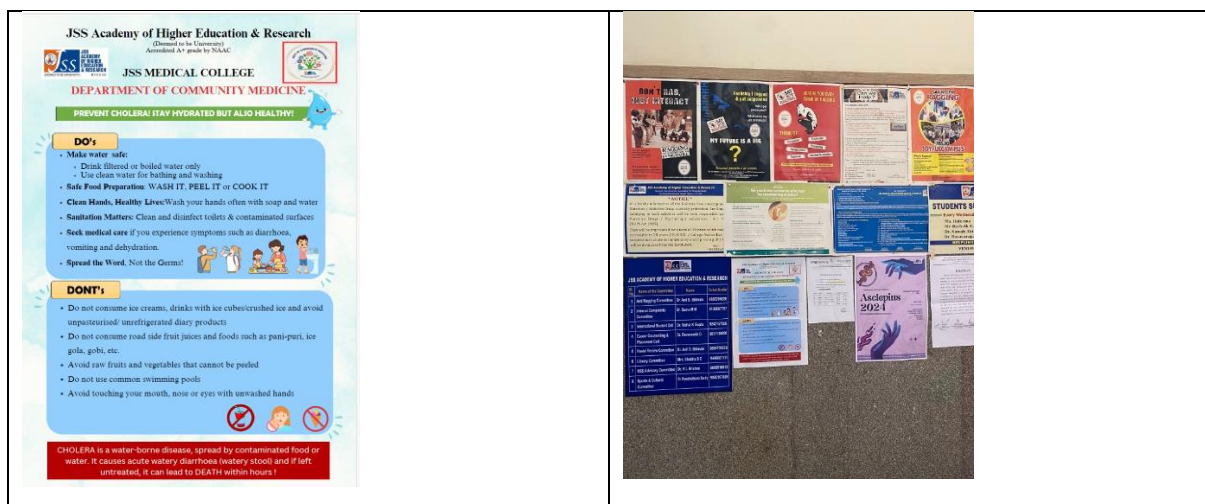


## OTHER INITIATIVES BY THE MEDICAL COLLEGE

1. The Medical Education Unit has conducted Foundation Course for 1<sup>st</sup> year MBBS Students of JSS Medical College from **Foundation Course for Phase 1 Students (2024-25 batch) from 14<sup>th</sup> October to 26<sup>th</sup> October 2024**. Eminent resource faculty from within and outside the institution took sessions on the areas as prescribed by National Medical Commission. The topics covered in the course were, apart from others were on Patient safety and biohazard safety-‘Concept of Biosafety – Handling Biowaste / Biomaterial Management’, significance of hand hygiene in preventing nosocomial infections.
2. The Department of Community Medicine, JSS Medical College which had established a Standard Operating Procedure for Water Quality Testing for chlorination is being successfully implemented. Water samples from across the institutions including the hostel, and guest house are being regularly tested for the presence of adequacy of chlorine in the water. If found inadequate, measures are taken to improve chlorination.



3. Health education material on keeping safe during Cholera Outbreak was developed by Department of Community Medicine. The same has been displayed at the JSS Hostel premises.

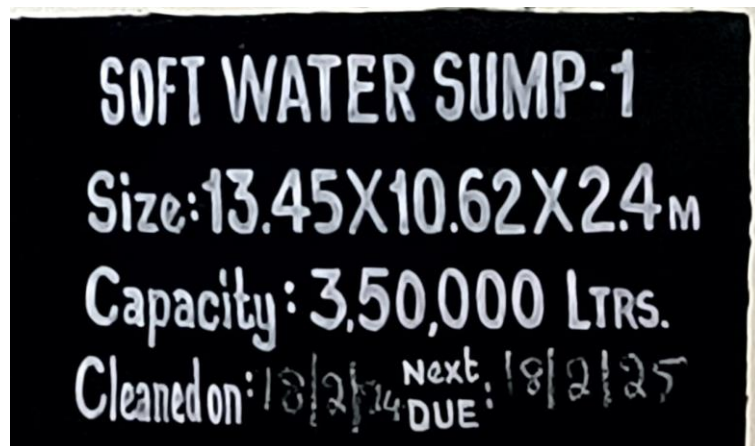




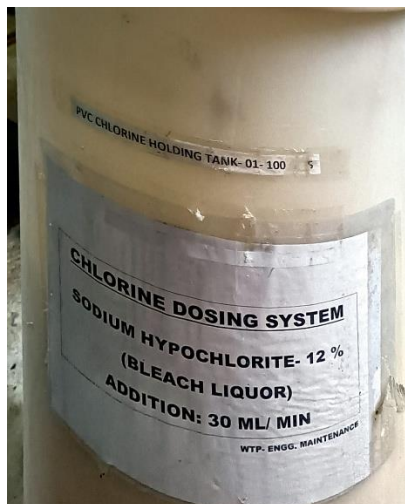
### 3. Water Sanitation Observation by the Community Medicine team.

Regular assessment of water sanitation, chlorination is conducted in the hospital, college and hostel premises by the team from department of Community Medicine.

The hospital and college premises have well established water disinfection and RO facilities. Water is treated with liquid chlorine using Sodium Hypochlorite solution of 12% strength.



Labels of tank capacity and dates of cleaning of the storage tank.



Chlorination Pump Inspection of process of chlorination and functioning of the pump

### 4. Inauguration of program to enhance Women's well-being on occasion of International women's day



Dr.H.Basavana Gowdappa, Vice Chancellor JSSAHER, Mysuru launched unique program to enhance Women's well-being on occasion of International women's day. This program will unfold in Chamarajanagar and Mysuru districts in collaboration with JSS College of Nursing and JSS School of Nursing. Underprivileged women

will be provided education about menstrual hygiene and free access to menstrual cups that is environment friendly, cost-effective and can be utilised for 5yrs to 8 yrs.The program is funded by Minds United Trust and Infosys Foundation. The research aspects related to the program will be lead by multidisciplinary team coordinated by Dr M Kishor, MBBS MD, Prof & HOD, Psychiatry Department, JSSMC, JSSAHER. More than 40 women will benefit from 1st phase of Program that began on 11th March 2025.

#### **5. Geriatric Nursing Assistant Certification Training Program for the housekeeping staff of JSSH – 16-03-2025**

The Department of Geriatrics, JSS Hospital, in collaboration with Janashikshana Samsthe, Mysuru, conducted a 10-day Geriatric Nursing Assistant Certification Program (5–16 March 2025) for housekeeping staff, focusing on quality elderly care. The training combined theory and practical sessions on patient mobility, nutrition, hygiene, and communication, aiming to equip participants with essential skills to maintain cleanliness, promote personal hygiene, and ensure a healthy environment for the elderly. Participants received certification upon completion.



#### **6. Continuing Nursing Education, Mysuru – 24-04-2025-National Neonatology Workshop**

The Department of Paediatrics, JSS Medical College, in collaboration with the National Neonatology Forum, Karnataka, and Ovum Woman & Child Specialty Hospital, organized a one-day Continuing Nursing Education workshop on 24 April 2025 for NICU nurses, with a strong focus on hygiene and infection control. Thirty nurses participated in interactive skill stations covering hand hygiene, CLABSI and VAP prevention, NICU environmental cleanliness, and safe handling of IV lines, along with neonatal care practices such as KMC, LBW management,

and neonatal resuscitation. Emphasis was placed on evidence-based hygiene protocols, environmental sanitation, and structured communication to improve neonatal outcomes.

