

**IMPACT OF UTTAR PRADESH
JAL JEEVAN MISSION IMPLEMENTATION
ON WATER-BORNE DISEASES, HEALTH & HYGIENE
FROM A WASH PERSPECTIVE**

JANUARY - MARCH 2025

**A RAPID STUDY CONDUCTED BY
WATERAID INDIA
FOR THE STATE WATER AND SANITATION MISSION OF
GOVERNMENT OF UTTAR PRADESH**

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Executive Summary

This exploratory study has been designed to assess the implementation of the Jal Jeevan Mission (JJM) in Uttar Pradesh, with a special focus on the state's eastern districts. The study focuses on functionality, sustainability, and community participation in piped water supply systems. Multiple data collection tools were used to develop the study, including field visits, household surveys, stakeholder interviews, and transect walks across multiple villages. The study identifies strengths, hurdles, and opportunities to strengthen the long-term impact of the mission.

Findings indicate that Uttar Pradesh has made considerable progress in expanding access to rural household tap water connections. The involvement of Village Water and Sanitation Committees (VWSCs), Jal Sakhis, and Gram Panchayats in water quality testing, awareness generation, and grievance redressal has enhanced community ownership and local accountability. However, scopes for improvement have been identified in areas such as regular water quality testing, technical capacity, operation and maintenance (O&M) planning, and community awareness.

Notable best practices observed include the innovative repurposing of old handpump locations for new JJM taps, integration of IEC messages through local wall art, and the pioneering "Jal Gyan Yatra" initiative, which sensitised school children and teachers to water infrastructure and testing. FTK-trained women (Jal Sakhis) emerged as critical actors in bridging technical and social gaps by engaging directly with households on water safety.

Based on the evidence gathered, the study offers a series of actionable recommendations to support the sustainable operation and maintenance of piped water systems. These include strengthening institutional frameworks, adopting utility-based models, ensuring financial sustainability through user fees, enhancing technical and community capacities, integrating climate-resilient infrastructure, and deploying real-time monitoring tools.

While the Jal Jeevan Mission (JJM) has largely focused on infrastructure development and access, its design and early outcomes reveal strong potential to evolve into a more demand-responsive, service-orientated model to ensure long-term sustainability and encourage community ownership. The outcomes would significantly contribute to achieving Sustainable Development Goal 6 (clean water and sanitation) and improve public health outcomes in rural Uttar Pradesh.

Background

The National Jal Jeevan Mission (JJM), launched by the Government of India, is an ambitious initiative aimed at providing safe and adequate drinking water through individual household tap connections by 2028 to all rural households. The mission focuses on building community-driven, sustainable water supply systems, emphasising both infrastructure and behavioural aspects of water management. The mission encourages local communities to take ownership of water resources, thereby strengthening infrastructure, building resilience, and promoting healthy practices.

At the behest of the State Water and Sanitation Mission office, Lucknow, Uttar Pradesh, WaterAid India (registered as Jal Seva Charitable Foundation) has undertaken a “study on the impact of the JJM on waterborne diseases, health, and hygiene with a specific focus on WASH (water, sanitation and hygiene)” during the period of January to March 2025.

The study is aimed at getting a better understanding of the linkages between the infrastructural improvements in water supply under JJM vis-à-vis the overall health and behavioural outcomes on WASH of a community. The study explores the impact of the JJM village-level piped water supply schemes (especially in the last three years) on broader community health. The findings of the study hope to provide a direction to strengthen JJM implementation and ultimately improve the wellbeing and quality of life of the communities. The study was undertaken in three districts of Uttar Pradesh – Gorakhpur, Kushinagar and Maharajganj – as recommended by the State Water and Sanitation Mission.

Objectives

1. To assess the impact of JJM on waterborne diseases and overall community health.
2. To assess the impact of JJM on the education of children.
3. To assess changes in social behaviour and collective impact on the community.
4. To identify operational or infrastructural challenges that affect the long-term sustainability of the JJM in the region.
5. To make recommendations to mitigate challenges and address identified problems.

Water and Quality of Life

Water security is fundamental to health, economic stability, and social well-being. In India, quality water access has played a major role in supporting the nation's economy, preserving its environment, and improving standards of living. In rural India, where the communities' wellbeing is directly and immediately impacted by access to water, their vulnerability increases manifold. Socio-economically disadvantaged communities such as those residing in remote habitations and geographically and climatically challenged terrains particularly face the highest risks associated with inadequate and contaminated water supply.

With increasing contamination of surface water, climate change, and extreme weather events, rural India gradually leans more on groundwater for productive and domestic uses. However, the growing groundwater demand is resulting in depleting water tables and increased risk of contamination, threatening the water security of rural India. Water security is a multifaceted concept encompassing availability, accessibility, use, and stability of access over time. Water insecurity is triggered when one or more of these dimensions are compromised due to water scarcity, excess (e.g., flooding), or contamination (Miller et al., 2021). Agriculture and allied activities are very critically dependent on timely and adequate water availability, especially for irrigation. This increasing water demand stresses the local water resources and leads to seasonal water crises. Moreover, the landscape of water access and management has been dramatically transformed by the advent of economical extraction technologies, increasing competition for resources, and widespread overexploitation of groundwater reserves (Shah et al., 2021). This resulted in aggressive competition among the users; wealthier farmers took the opportunity to dig deeper wells and extract more, but the resource-poor households struggled to access the depleting groundwater (Kulkarni & Shankar, 2014). Therefore, the rural communities are often left with no choice but to purchase water or use contaminated water sources, exacerbating the cycle of waterborne diseases and economic vulnerability. This depletion not only reduces the availability of water for domestic use but also increases the risk of contamination due to biological and chemical contaminants ingressing the groundwater reserves from geogenic and anthropogenic activities. Moreover, rural India is traditionally dependent on personal or community-dug ponds, streams, wells, and shallow borewells with poor filtration processes practised at the household level. With increasing extraction and contamination of groundwater, the rural population is becoming more vulnerable to frequent and common occurrences of waterborne diseases (Kanyagui et al., 2024).

From a gender perspective, the responsibility of water collection falls disproportionately on women and young girls, especially in households without piped water supply. Women in rural areas spend hours fetching water, impacting their health, educational opportunities, and economic participation (Crow & Sultana, 2010). This burden contributes to gender disparities by reinforcing traditional roles that limit women's mobility and access to income-generating activities.

Given these complex challenges, India recognised the urgent need for a structured approach to water supply that prioritises accessibility, safety, and sustainability. The limitations of traditional water sources—combined with the public health crisis posed by waterborne diseases and gender disparities in water collection—led policymakers to rethink rural water management strategies. The failure of fragmented water supply programmes, the increasing role of groundwater contamination, and the need for climate resilience catalysed the shift towards piped water supply systems. Piped water supply systems (PWSS) that aim to bring clean and reliable water to the community have economic and social benefits apart from an impact on the health of communities. A PWSS enhances school attendance by reducing the time spent on water collection and improving health, which allows children to attend school more regularly. Furthermore, piped water supports economic development by enabling households to engage in productive activities, contributing to overall community well-being. This reduction in drudgery allows more time for education and economic activities, improving overall quality of life. Assured availability of safe drinking water at home reduces absenteeism from school and work, providing a safer environment and cutting healthcare

costs. The shift to PWSS models influenced the development of a community-driven approach for village-level supply and management. This ultimately shaped the Jal Jeevan Mission as a transformative intervention in India's water supply landscape.

The Power of Piped Water: How Safe Drinking Water Improves Health

The world continues to face pressing challenges posed by unsafe water, inadequate sanitation and poor hygiene – challenges exacerbated by climate change, population growth, the need to prepare for pandemics and re-emerged cholera outbreaks in countries long free from the disease. Despite some progress, in 2023 new data revealed that 2 billion people still lack safely managed drinking water.

Access to safe drinking water through piped supply systems is a fundamental component of public health, playing a crucial role in reducing illnesses and improving overall well-being. There is a complex interplay between piped water and health, with much positive contribution in reducing morbidities and mortality. Safe drinking water, sanitation and hygiene (WASH) are essential for human health and welfare. In addition to being critical for good health, safe WASH supports livelihoods, dignity, and school attendance while fostering resilient communities with healthy surroundings. Contaminated surface and groundwater are used for drinking, irrigation, bathing, and household uses, and drinking contaminated water damages health by causing diseases like diarrhoea, and as a result, communities are severely burdened.

Many neglected tropical illnesses (NTDs), including soil-transmitted helminths and trachoma, can be avoided with adequate and safe WASH. More than a million diarrhoeal fatalities occur each year as a result of inadequate WASH conditions, which also make it more difficult to effectively prevent and treat other illnesses like cholera, NTDs, and malnutrition. Broadly, we can categorise the various conditions of ill-health and disease caused by lack of good-quality water, as follows:

- Waterborne Diseases: Diarrhea, cholera, typhoid, hepatitis A & E
- Water-Washed Diseases: Skin infections, trachoma, scabies
- Vector-Borne Diseases: Malaria, dengue (linked to water stagnation)
- Chemical and Physical Contamination Effects: Fluorosis, arsenicosis, heavy metal poisoning (*Montgomery & Elimelech, 2007*)

Evidence suggests that improving service levels towards safely managed drinking water or sanitation, such as regulated piped water, can dramatically improve health by reducing diarrhoeal disease deaths. There are several models and past experiences available to ensure these systems deliver safe, reliable water while addressing diverse challenges.

Reduction of Waterborne Diseases

Piped water systems minimise exposure to microbiological contaminants linked to diarrhoea, cholera, dysentery, and typhoid. These diseases are prevalent in areas where water sources are contaminated, and they disproportionately affect young children and vulnerable populations. By replacing unsafe sources like open wells or surface water, piped water supply systems reduce faecal-oral pathogen transmission, leading to fewer cases of diarrhoea and

other water-related illnesses. For example, a study in a rural area found that on-premises piped water reduced *E. coli* contamination in stored water by 0.5 log₁₀, though hand contamination remained unchanged, underscoring the need for complementary hygiene interventions. Studies have shown that access to indoor piped drinking water can reduce the likelihood of diarrhoea by up to 2.2 percentage points in urban areas. Studies have shown that access to piped water can reduce the prevalence and duration of diarrhoea among children under five, which is a major cause of morbidity and mortality in rural India. Physical and chemical contamination are also commonly found in water sources. The presence of fluoride, arsenic, and nitrates in drinking water is a significant concern in many states, leading to chronic health conditions such as fluorosis and methemoglobinemia. Inadequate access to safe drinking water also contributes to malnutrition, particularly among children, as recurrent diarrhoeal infections hinder nutrient absorption and overall growth (World Health Organisation, 2024).

An article in *Nature* (2021) reported that in Zambia, piped water reduced water-fetching distances by 90%, yet minimal changes in diarrhoeal disease prevalence highlighted the need for holistic interventions. Similarly, India's community-managed schemes highlight that institutional support and training are vital for long-term functionality (WaterAid India, 2020).

Improved Health Outcomes

Beyond reducing specific diseases, piped water contributes to broader health improvements. It reduces the time spent collecting water, allowing more time for other activities such as self-care, education and work. This is particularly beneficial for women and girls, who often bear the burden of water collection. Improved access to piped water has been linked to better self-reported health among women, especially in rural areas. Moreover, households with piped water report being happier and healthier, with more opportunities for economic participation.

Reduced Mortality and Morbidity

The impact of piped water on mortality and morbidity is substantial. By reducing waterborne diseases, piped systems help decrease the number of deaths related to these illnesses. For example, improvements in water supply and sanitation have contributed to a significant reduction in diarrhoeal deaths globally. Additionally, piped water systems support the prevention of neglected tropical diseases (NTDs) such as trachoma and schistosomiasis, which are linked to poor water and sanitation conditions.

Health Benefits of Jal Jeevan Mission (JJM)

The Jal Jeevan Mission, launched in 2019, aims to provide functional household tap connections (FHTCs) to every rural household by 2024. This initiative has already led to a significant increase in tap water connections, from 16.69% in 2019 to 62.79% by June 2023. The mission is expected to avert substantial numbers of diarrhoeal deaths and prevent millions of Disability Adjusted Life Years (DALYs), resulting in considerable cost savings.

In summary, piped water supply systems play a vital role in improving health by reducing waterborne diseases, enhancing overall well-being, and contributing to economic and social

development. As the government and the people living in communities in rural India strive for better health outcomes, investing in safe and reliable piped water systems is a critical step forward. By addressing the challenges associated with these systems and ensuring equitable access, we can unlock their full potential to improve public health and quality of life. Initiatives such as the Jal Jeevan Mission are pivotal in achieving these goals. However, the various operational and sustainability issues while ensuring equitable access remain key challenges that need to be addressed to maximise the health benefits of piped water systems.

Piped potable water systems, when designed and managed per existing guidelines, are a powerful tool for disease prevention and health promotion. Success requires robust risk management, community engagement, and integration with sanitation and hygiene measures. Continued investment in infrastructure, surveillance, and education remains essential to maximise their public health impact.

Jal Jeevan Mission in Uttar Pradesh

In India, the domestic rural water supply services have evolved gradually since the Five-Year Plans of the early 1950s. These efforts led to the creation of the National Rural Drinking Water Programme (NRDWP) in 2009. This effort was developed with the intention of addressing the challenges the previous policies faced—hence, focusing on equitable and inclusive supply for all domestic purposes, decentralised management and operations, and a focus on water recharge and conservation. With this, the role and involvement of the community were acknowledged and included in the water supply services (Chaudhuri, Roy, McDonald, & Emendack, 2020).

In 2019, the NRDWP was replaced by the Jal Jeevan Mission (JJM), which specifically focused on providing functional household tap connections (FHTCs) with 55 litres of water per capita per day (LPCD) to all rural households by 2024. With JJM, India wants to achieve the Sustainable Development Goal 6 (SDG-6) and ensure inclusivity in access to drinking water for all. To strengthen the scope of community engagement in the operation and management of supply schemes, JJM includes decentralised structures.

At the state level – State Water and Sanitation Mission (SWSM); at the district level- District Water and Sanitation Mission (DWSM); and at the village level-Village Water and Sanitation Committee (VWSC). The programme also brings a focus on health issues, educational issues (especially for girl students), and lower women's participation in the labour market and has developed ways to generate economic activities in various stages of implementation (Singh & Naik, 2024).

While JJM operates as a nationwide programme, implementation autonomy is given to the states, which make their own State Action Plans (SAPs) for implementation. The programme broadly aims to develop two categories of water supply infrastructure:

1. In-village infrastructure (Single Village Schemes): Primarily dependent on groundwater sources, these schemes include source development, augmentation, and greywater management systems tailored to cater to individual villages.

2. Bulk water transfer infrastructure (multi-village schemes): These larger-scale structures, which include water treatment facilities and distribution networks designed to serve multiple villages, particularly in regions where local water sources are inadequate or contaminated. The MVS includes a network of pipelines and storage facilities to ensure water supply to the tail-end villages, called the in-Village Distribution System (IVDS) or in-village Piped Water Supply (PWS).

The NJJM has been implemented in UP as well since its inception, and according to the State JJM portal, Uttar Pradesh has achieved 85% household coverage under the scheme as of March 2025, with approximately 50% of villages fully saturated with tap water connections. Overall, JJM's implementation in Uttar Pradesh has progressed toward achieving universal access to safe drinking water, improving public health outcomes, and enhancing resilience against waterborne diseases. However, sustained efforts in infrastructure maintenance, capacity building, and community participation will be key to ensuring long-term success.

Methodology

Approach and Design

The study was designed to conduct exploratory research using a mixed-methods approach adapted to address the pre-identified scope. The study adopts a '**Before–After**' approach, which enables researchers to assess and compare outcomes both before and after the implementation of JJM to understand its impact. This design is particularly well-suited for evaluating interventions implemented within a short- to medium-term timeframe, such as JJM, where the duration between pre- and post-implementation is five years or less. By capturing changes in key indicators such as health, sanitation, hygiene outcomes, social dynamics such as education and economic opportunities, this approach assesses the tangible impacts of JJM while accounting for external influences and community-driven adaptations.

Tools for Data Collection

- **Key Informant Interviews (KII), Mixed Questionnaire:** A structured set of open-ended and closed-ended questions was designed to assess the pre-JJM and post-JJM status. The questionnaire was divided into thematic sections, with tailored versions developed for different Key Informant Interviews (KIIs), ensuring both common and respondent-specific questions. Interviewers administered the questionnaires with a diverse set of stakeholders, including village-level informants (teachers, ASHA workers, VWSC secretaries, SHG members, and village-level influencers), cluster-level health officers, and district-level operational staff.
- **Focus Group Discussions (FGDs):** Each FGD included 6-8 participants from different demographic groups (age, gender, socio-economic background). The discussions, lasting approximately one hour, captured community-wide perspectives on water access, social changes, health, and education. CHOs and ASHAs, after individual KIIs, also participated in FGDs for triangulation of responses.
- **Transect Walk:** A guided walk through the village was undertaken, with interactions

with community members to visually assess water sources, storage, and distribution infrastructure, as well as to understand the prevailing local context on the issues relevant to the study.

- **Observation Notes:** Field investigators documented additional insights, unexpected findings, and cumulative observations regarding village-level water access, health, sanitation, and behavioural changes.
- **Case studies:** These highlighted some of the ground realities and success stories.

Study Area

The Gangetic floodplains cover approximately 85% of Uttar Pradesh’s total geographical area, providing the state with abundant surface water sources and an extensive network of groundwater aquifers that sustain its rural economy. However, five districts in Eastern Uttar Pradesh—Gorakhpur, Kushinagar, Maharajganj, Sant Kabir Nagar, and Siddharth Nagar—are highly vulnerable to flooding due to their location in an area with a complex system of embankments and drainage structures. This region receives the highest rainfall in the state during the monsoon season and is densely populated.

Despite its rich surface water and groundwater resources, the region's geographical and hydrological conditions make these sources highly susceptible to contamination. This has led to significant sanitation and water quality challenges, creating an environment conducive to the spread of waterborne diseases and posing severe public health risks.

The implementation of the Jal Jeevan Mission (JJM) presents an opportunity to address these challenges. To assess its impact, this study focuses on three districts as a sample set—Maharajganj, Kushinagar, and Gorakhpur—to analyse the programme’s effectiveness, challenges, and opportunities in ensuring access to safe drinking water and improving overall community well-being.

- The study was conducted in the three districts, with **five villages per district**. i.e., a total of **15 villages** were selected based on predetermined inclusion criteria and inputs from the SWSM.
- The key criteria in the village selection process were that the selected villages should have a functional JJM scheme for at least 2 to 3 years and be managed by the community even if the official handover was yet to take place.

District	Block	Village	Year of JJM completion
Maharajganj	Sadar	Kotamukundpur	2023
		Murila Tiwari	2023
	Brijmanganj	Sahajanwa Babu GP	2020

		Sarvdamangarh	2020
		Shahabad	2021
Gorakhpur	Campierganj	Sonaura Khurd	2020
		Chahori	2020
		Dubaulia	2020
		Padauli	2020
		Khairat	2020
Kushinagar	Kasia	Mathia Madhopur GP	2022
		Andhya	2022
	Sevarahi	Bahirabari	2022
	Sevarahi	Banwaria	2022
		Mairwa	2023

UP Study- Districts



Target Respondents

- **Village-Level Key Informants:** Teachers, Anganwadi workers, ASHA workers, VWSC secretaries, women SHG members, FTK-trained women and recognised influencers.
- **Cluster-Level Respondents:** Community Health Officers from two Ayushman Arogya Mandirs per district.
- **District-Level Stakeholders:** One Jal Nigam Rural Executive Engineer per district (subject to revision based on engagement levels).

Desk Review and Administrative Coordination

To ensure a comprehensive assessment, qualitative insights from KIIs and FGDs were complemented with quantitative data from government records and health databases, wherever made available.

- Secondary data was sourced from relevant government departments at **state and district levels**.
- Letters were sent to **District Collectors, Zilla Parishads, and Village Panchayats** to ensure cooperation and access to data.
- The study team designed **structured and open-ended questionnaires** for key informant interviews and FGDs, informed by past studies and relevant literature.

Analysis Framework

The framework for results analysis was structured around key thematic areas to evaluate access, quality, behavioural impacts, health outcomes, and socio-economic effects.

1. Availability and Access to Safe and Adequate Water

This section assesses access to safe and adequate water using indicators derived from the Joint Monitoring Programme (JMP) guidelines and JJM criteria to evaluate water availability in the study locations.

- (a) Access to Improved Drinking Water Sources: Examines the availability of improved sources (e.g., borewells, piped water supply, bottled water) versus unimproved sources (e.g., unprotected wells and springs), as classified by JMP.
- (b) Water Quality Testing: Investigates local water quality testing mechanisms to assess contamination levels in different sources.
- (c) Adequacy of Water Supply: JJM has fixed 55 LPCD as the adequate water requirement for rural domestic needs. The study looked at the frequency of supply of water and if the daily supply was sufficient to meet domestic needs and encouraged reduced dependence on unimproved water sources.

2. Usage Behavior and WASH Practices

This section covers the behavioural changes at household and community levels, focusing on sanitation, hygiene, and water management practices:

- (a) Sanitation and Hygiene Impacts:
 - o Handwashing practices
 - o Toilet usage and maintenance
 - o Water storage and household filtration practices
- (b) Community Participation, Accountability, and Ownership:
 - o Operation & Maintenance (O&M) of water supply systems
 - o Community-driven governance methods
 - o Mechanisms for ensuring equitable access
- (c) Gender Roles in Water Management:
 - o Women's and marginalized groups' participation in decision-making
 - o Division of labor related to water collection and household WASH activities

3. Health Impacts

The study assesses the impact of improved water access on disease prevalence and health of the community by looking at waterborne disease incidence and mortality data over the period from 2018 to 2024 as made available through the state health authorities.

4. Equity and Well-being

The study explores the broader socio-economic and gendered impacts of improved water access, integrating concepts from the Fundamental Human Needs Framework, Capability Approach, Water Poverty Index, and Water Security Framework.

(a) Impact on Girl Child Education:

- o Reduction in absenteeism due to improved WASH facilities in schools
- o Time saved from water collection, allowing better educational participation

(b) Gender, Labour, and Safety:

- o Time poverty: Reduction in time spent on fetching water
- o Safety and dignity: Impact on women's security in water access points

(c) Economic Benefits and Participation:

- o Increased women's participation in economic activities
- o Enhanced household productivity due to improved health

(d) Infrastructure Reliability and Sustainability:

- o Functionality and maintenance of water supply systems
- o Community awareness programs for long-term sustainability

(e) Time Saved and Quality of Life:

- o Improved family well-being due to reduced burden of water collection
- o Increased time for economic, social, and recreational activities

Analysis and Results

Study Respondents

A total of 79 KIIs were collected from the study, and a total of 15 FGDs were conducted. Among the respondents, **51 (64.6%) were female**, while **28 (35.4%) were male**, reflecting the significant involvement of women in discussions related to water access, sanitation, and hygiene. The larger sampling of female respondents was intentional to understand the gendered role of water management in rural households and if there are any changes post JJM. Their perspectives provide valuable insights into the impact of water supply interventions, sanitation practices, and related health and economic changes.

Table : Gender distribution of participants

District	Female	Male	Total
Gorakhpur	17	15	32
Kushinagar	15	5	20
Maharajganj	19	8	27
Total	51	28	79

Availability and access to Safe and Adequate water

Access to Improved Drinking Water Sources

The implementation of the Jal Jeevan Mission (JJM) has visibly improved access to safe and reliable drinking water across the three districts of Gorakhpur, Kushinagar, and Maharajganj. Transect walks revealed that before the implementation of the JJM, rural households primarily depended on local surface water bodies, wells, and groundwater sources (handpumps with an avg. depth of 30-70 ft) for their daily water needs.

As per the survey data (Fig.1), 92.4% of households now have access to tap water connections under JJM, significantly reducing dependence on older, less reliable sources. The shift to tap water connections has also ensured better water quality, as reported in focus group discussions (FGDs) and transect walks. Households have indicated that they now primarily use JJM-provided tap water for drinking and cooking, highlighting the programme's impact on everyday life. The community believes that the water quality has improved post-JJM due to treated water being supplied, with regular testing being done and a perception of reduced contamination. One of the respondents, Kamala shared, "The water from JJM supply tastes better than our handpump water, and the regular supply and testing give us assurance that the panchayat is not compromising on the quality." Similar responses were documented, as

many shared improved quality and trust in JJM supply water during the FGDs and KIIs. These responses suggest a growing trust of the community in JJM supply and its quality. This trust is crucial to reduce communities dependence on multiple water sources to not only reduce consumption of contaminated water but also to discourage drilling of new and deeper wells, which leads to over extraction and wastage. The data collection highlighted that respondents with a higher satisfaction level showed a behavioural change to reduced dependence on multiple sources.

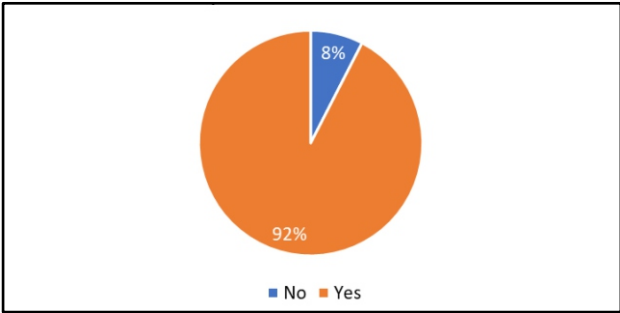


Fig. 1: *Do you have access to a tap water connection at your household post-JJM*

Water Testing

Before the implementation of the Jal Jeevan Mission, community awareness regarding water quality testing was minimal. Key informant interviews (KIIs) revealed that almost 80% (Fig.2) of the respondents were unaware of any water quality testing done pre-JJM. Further, FGDs revealed that pre-JJM people were largely unaware of any systematic water quality monitoring, which contributed to continued reliance on unsafe water sources. Approximately 68% (Fig.3) of respondents shared that there were either no water user groups or they were not aware of any such groups pre-JJM who were responsible for water testing or the community could reach out to for any water quality issues. The lack of awareness about contamination risks meant that households did not prioritise water safety, making them more vulnerable to waterborne diseases. Post-JJM, the scenario is different with the introduction of FKT-trained women from village level, called Jal Sakhis. They played a crucial role in ensuring regular water quality monitoring. These committees actively engage with the community, conduct routine water testing, and serve as the primary point of contact for any water quality-related concerns.

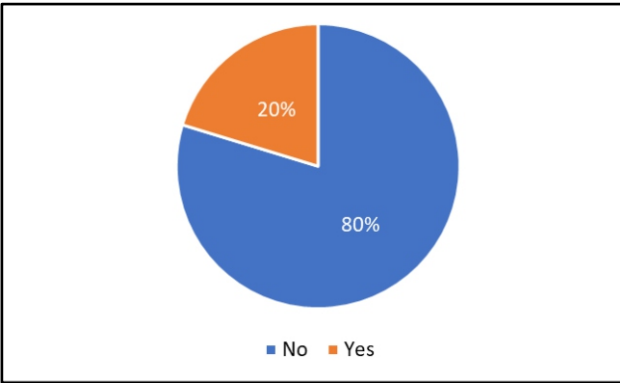


Fig. 2: *Personal opinion/perception of- Water quality testing done at your village/institution pre-JJM*

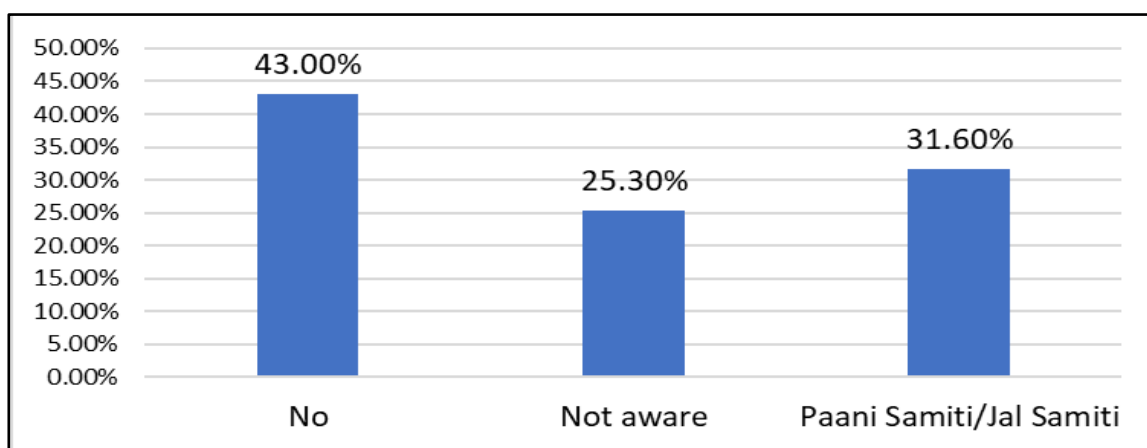


Fig. 3: Personal opinion/perception of – Was any kind of water user group formed to address water quality issues and do water testing?

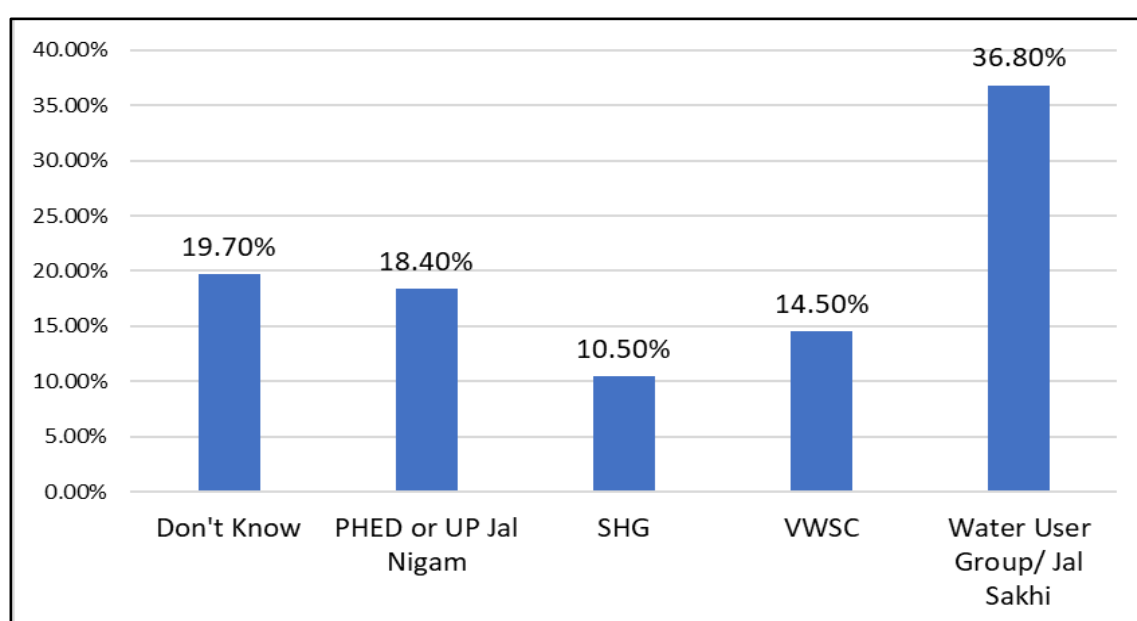


Fig. 4: Personal opinion/perception of- Who in your village/institution is responsible for the water quality testing Post-JJM?

KIIs, FGDs and transect walks highlighted that water testing happened regularly post JJM. Responses indicate that testing happens regularly in all villages using Field Testing Kits (FTKs) at the village level, along with at least one laboratory test annually by the State Water and Sanitation Mission (SWSM) (results of which were not available to the study investigators). Jal Sakhi shared that they received FTKs in bulk twice a year and received Rs.20 for each water testing data entry into the Water Quality Management Information System (WQMIS) as an incentive. These testing sessions also serve as an opportunity to engage with households, demonstrating the testing process and sharing real-time water quality results. This interactive approach has significantly improved awareness, as villagers are now more informed about contamination risks and are making more cautious choices regarding alternative water sources.

Findings (Fig. 4) indicate that the majority of the community are now aware of who conducts water testing and whom to approach for quality-related issues. With JJM's emphasis on water

quality monitoring, there has been a noticeable shift in community awareness and dependence on safer drinking water sources. This shift highlights the critical role of not just improving water testing mechanisms but also integrating awareness-building initiatives to ensure long-term behavioural change and sustained water safety practice.

Water quality testing under JJM follows a structured approach to ensure the safety of drinking water. As per JJM guidelines, groundwater and surface water sources are tested 4-2 times for chemical and bacteriological contaminants every year. At the household level, tap water is tested at least once every month using FTK for chemical and bacteriological contamination, including the presence of *E. coli* and residual chlorine. The household-level water testing is done by FTK-trained women. Additionally, laboratory testing is carried out in government/NABL-accredited or state-certified labs to ensure compliance with quality standards.

However, despite these structured guidelines, implementation varies across regions. About 20% of respondents reported being unaware of any water user groups in their village or of any water testing activities taking place. This inconsistency in testing frequency points to the need for strengthened and standardised monitoring practices to ensure uniform implementation.

Although some community members continue to express uncertainty about the specific procedures involved in water testing, the overall trend suggests a growing sense of ownership and awareness regarding water safety. Continued and consistent community engagement will be essential to reinforce this positive momentum and foster deeper, long-lasting behavioural changes among all stakeholders.

As awareness around water quality continues to grow, more individuals are participating in discussions on safe drinking water and reporting contamination issues when they arise. This increasing community involvement can further enhance accountability and improve the effectiveness of the programme. Nevertheless, an opportunity for further strengthening the system was identified: there is no linkage to corrective actions to address any defects found during testing. Addressing this gap could substantially strengthen the system and lead to more responsive and resilient water quality management at the village level. Regular water quality testing is crucial for real-time identification of contamination risks and timely intervention. Strengthening real-time data collection and response mechanisms will enhance the adaptive capacity of JJM's framework, ensuring better public health outcomes. As JJM evolves, greater consistency in testing frequency, deeper community participation, and improved data utilisation will be key to maximising its impact. A more decentralised, community-driven approach to water quality management can further empower rural households, ensuring sustained access to safe drinking water across villages in India.

Adequacy of Water Supply

Prior to JJM, water collection was a time-consuming and labour-intensive task, requiring multiple daily trips to secure an adequate supply. In Kushinagar, more than half (55%) of respondents reported making over four trips per day, while in Maharajganj, 44.4% of households faced a similar challenge. The situation was further exacerbated during seasonal shortages, with 54.4% of respondents stating that they had to collect water even more frequently. Additionally, the time spent per round trip was substantial, with 28.1% of respondents in Gorakhpur taking over 30 minutes per trip. These conditions placed a

significant burden on households, particularly women and children, affecting their time for education, economic activities, and overall well-being.

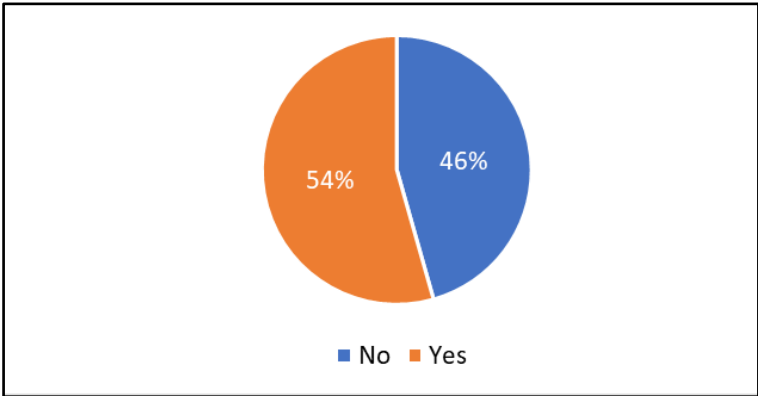


Fig. 5: Did the frequency of trips for collecting the water increase during the water crisis/seasonal crisis pre-JJM?

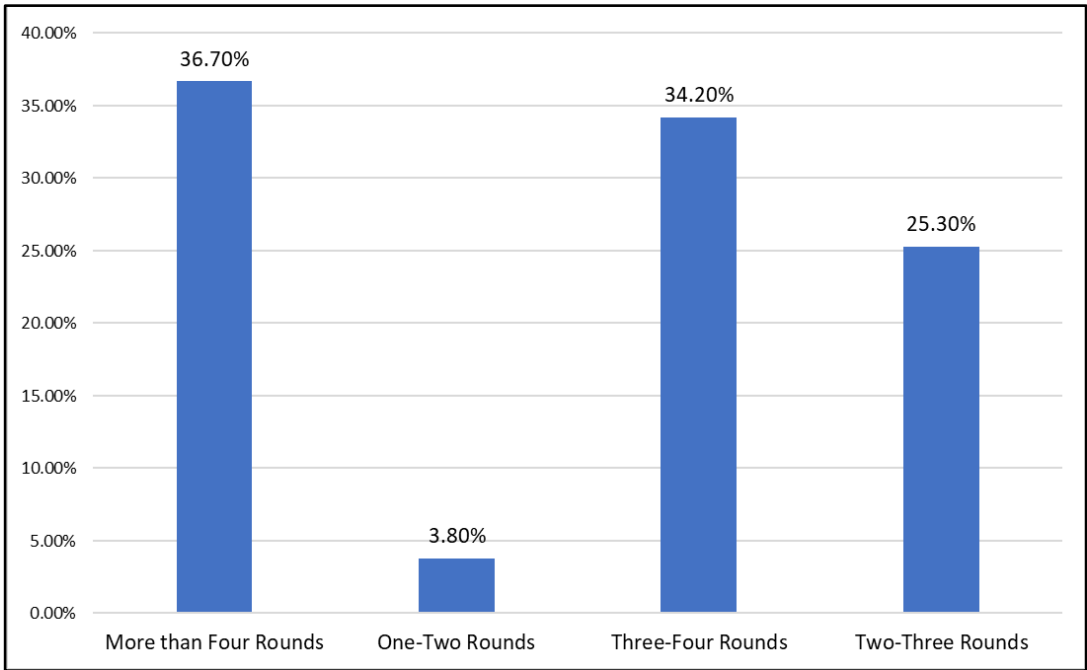


Fig. 6: How many rounds per day were made to collect water Pre-JJM?

The Jal Jeevan Mission (JJM) has significantly improved water accessibility and reduced the burden of water collection in the study districts of Gorakhpur, Kushinagar, and Maharajganj. The data indicates that 93% of JJM water supply systems are fully functional and provide daily water, with only 7% temporarily non-functional due to repair work. This high functionality rate demonstrates the effectiveness of JJM in ensuring regular water supply to rural households.

Post-JJM implementation, the current study finds that access to water has improved substantially, with 100% of respondents expressing satisfaction with the adequacy of their water supply. The duration of water supply has also improved, with most households receiving water for two to three hours per day. However, variations exist between districts—while all respondents in Maharajganj receive water for two to three hours, a higher percentage of

respondents in Gorakhpur (35.7%) and Kushinagar (57.9%) report receiving water for more than three hours daily. Overall, the respondents shared that the supply is sufficient for daily use. These findings highlight the overall success of JJM in enhancing water security while also pointing to the need for further standardisation of water supply durations across districts to ensure equitable access for all communities. Strengthening infrastructure, improving repair mechanisms, and ensuring consistent monitoring can further enhance JJM’s impact, making safe and adequate water access a sustainable reality for all.

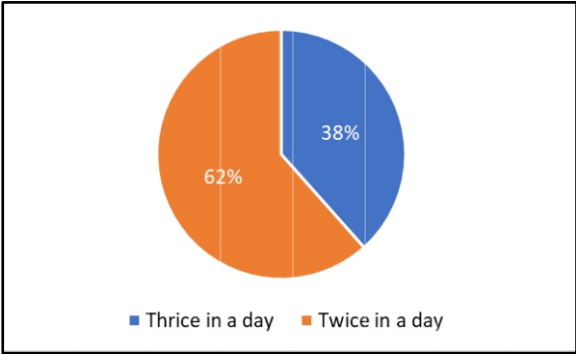


Fig. 7: What is the per-day frequency of the JJM water supply?

Usage Behaviour and WASH Practices

Sanitation and Hygiene Impacts

The KIIs and FGDs provided valuable insights, primarily recorded in a narrative format and later coded thematically to extract key findings. The implementation of JJM has shown significantly improved handwashing habits in both households and institutions. In Table 1, highlight the topics that FGD participants spoke about while discussing handwashing. Previously, water scarcity limited frequent handwashing, and many relied on soil or water alone. Post-JJM, respondents reported a noticeable shift towards regular handwashing with soap, especially before meals and after using the toilet. Schools and health centres now have dedicated handwashing stations, fostering better hygiene practices among students and staff. Awareness campaigns have played a crucial role in ensuring sustained behaviour change, leading to lower infection rates and an overall improvement in community health. However, a small percentage still lack JJM water connections, relying on stored water for handwashing.

The responses highlight a positive shift in handwashing practices, demonstrating the success of JJM in improving hygiene through better water access and awareness. The increased use of soap, higher handwashing frequency, and establishment of dedicated handwashing stations in institutions reflect the tangible benefits of the initiative. However, one notable challenge observed was the region's susceptibility to waterlogging due to its soil conditions, which occasionally led to suboptimal sanitation, particularly in areas with inadequate drainage infrastructure.

To ensure the long-term sustenance and deeper penetration of these behavioural changes, continuous engagement beyond the initial implementation phase is crucial. Ongoing awareness campaigns, reinforcement through community-led initiatives and regular monitoring can help prevent regression and embed these practices into daily routines.

Ensuring last-mile coverage for those still without JJM water connections will further strengthen the programme's impact.

Indicator	Percentage of Respondents
% of Respondents Shared That- There Has Been an Increased Handwashing Frequency	85%
% of Respondents Shared That- There Has Been an Increase in Regular Handwashing Before Meals, After Toilet, Handling Waste	60%
% of Respondents Shared That- There Has Been an Increase in Use of Soap or Liquid Soap	75%
% of Respondents Shared That- There Has Been an Increase in Dedicated Handwashing Stations in Schools/Institutions	50%
% of Respondents Shared That- There Has Been an Increase in Improved Handwashing Facilities in Schools/Health Centers	65%
% of Respondents Shared That- There Has Been an Increase in Behavioral Improvements in Students Due to Awareness Programs	40%
% of Respondents Shared- That There Has Been an Increase in Improved Hygiene Due to Better Water Availability	80%
% of Respondents Shared That -There Has Been a Reduction in Infections Due to Handwashing	55%

Table 1: Highlights the topics the participants mentioned independently while talking about handwashing during qualitative responses.

Toilet Usage and Maintenance

Before the Jal Jeevan Mission (JJM), sanitation challenges were widespread across many rural communities due to the lack of water access and poor wastewater management. Most of the households did not have piped water for sanitation (pre-JJM), forcing them to rely on hand pumps, stored water, or open sources for basic hygiene needs. As a result, toilet maintenance was difficult, leading to low toilet usage and continued open defecation in communities. Respondents also shared challenges with greywater disposal, as they discharged wastewater into open drains, leading to waterlogging and stagnant water accumulation. This not only created breeding grounds for mosquitoes but also worsened overall hygiene conditions.

With the implementation of JJM, a definite shift in sanitation practices has been observed. 92% of households now have access to piped water, reducing dependence on unsafe sources and improving hygiene. The availability of water in toilets has led to gradual behavioural changes, with 80% of respondents sharing that they themselves have observed, within their family and their surroundings, a reduction in open defecation. Similarly, 50% shared that greywater management has improved. However, some responses in FGDs and transect walks highlight certain drainage challenges that stemmed from pre-existing sanitation and drainage issues.

Overall, the participants shared positive responses highlighting significant changes in sanitation practices. Khusboo shared, "Earlier, we had to carry buckets of water just to clean the toilet. Many avoided using them because of this hassle. Now, with piped water in our house, maintaining hygiene is so much easier!" Whereas, Rahul shared, "There used to be dirty

puddles everywhere because of wastewater. With proper soak pits and drainage, our surroundings are much cleaner. The availability of water has also encouraged better handwashing habits: my children now wash their hands regularly after using the toilet. Earlier, they would just wipe their hands on their clothes because water was not easily available."

At schools, teachers observed a significant improvement in students using school toilets and improved access to handwashing. Better access to water has helped to significantly reduce the smell and hygiene issues at schools. The impact of JJM is evident in the transformation of sanitation practices, where increased water access, improved wastewater management, and reduced open defecation have significantly contributed to better hygiene and a healthier environment. As communities continue to embrace these changes, sustained efforts and further improvements in waste management will be essential to ensure that clean water and sanitation remain a cornerstone of public health and well-being.

Indicator	Percentage of Respondents
% of Respondents Shared That- There Has Been an Improved Access to Water for Toilets	80
% of Respondents Shared That- There Has Been an Observable Reduction in Open Defecation in their surrounding	75
% of Respondents Shared That- There Has Been an Improvement in Wastewater Management (Greywater & Drainage)	65
% of Respondents Shared That- There Has Been an Increase in Usage of Soak Pits & Septic Tanks	60
% of Respondents Shared That- There Has Been an Reduction in Waterlogging Issues	55
% of Respondents Shared That- There Has Been an Improvement in Availability of Handwashing Stations in Schools	50
% of Respondents Shared That- There Has Been an Increased Use of Soap & Detergent for Hygiene	70
% of Respondents Shared That- There Has Been Improvement in Overall Hygiene & Cleanliness	85
% of Respondents Shared That- There Has Been an Increased Toilet Usage in Schools	68

Table 2: Highlights the topics the participants mentioned independently while talking about saturation during qualitative responses.

Water Storage and Household Filtration Practices

Before the Jal Jeevan Mission (JJM), water storage and household filtration practices were largely informal, with most households relying on open buckets without lids or open buckets with poorly placed lids to store water. Only a small percentage (7.6%) used storage tanks with taps, indicating opportunities for improvement in safe storage practices. Filtration methods were also limited, with nearly 70% of households not following any filtration process before consumption. Cleaning of storage containers was practised by some; storage containers were practised by some using traditional methods like clay or ash, as modern cleaning products were either unavailable or not commonly used.

Post-JJM, while the primary method of water storage remains largely unchanged, more

households are storing water in larger quantities and properly. Post JJM, a significant number of people started storing water in some form of water tanks with varying capacity. Proper household storage reduces the need of fetching water multiple times a day. It also highlights how people are now more confident of the source of water they are using, encouraging them to reduce dependence on multiple sources of water. There has been a positive shift in cleaning habits, especially cleaning and maintaining water storage systems at a household level. More households now use detergent powders and soaps instead of traditional materials like clay and ash, reflecting a growing awareness of cleanliness and hygiene. Rekha shared, "Earlier, we used to clean our buckets with ash, but now we use detergent powder. It feels cleaner and safer."

However, with the increased confidence in piped water, household filtration practices have declined, as many now perceive it as unnecessary. The situation presents an opportunity to further strengthen awareness about safe water handling, ensuring that clean water remains safe until consumption. Encouraging practices such as covered storage, regular cleaning of containers, and simple filtration methods can complement the benefits of JJM, enhancing long-term water safety and hygiene at the household level.

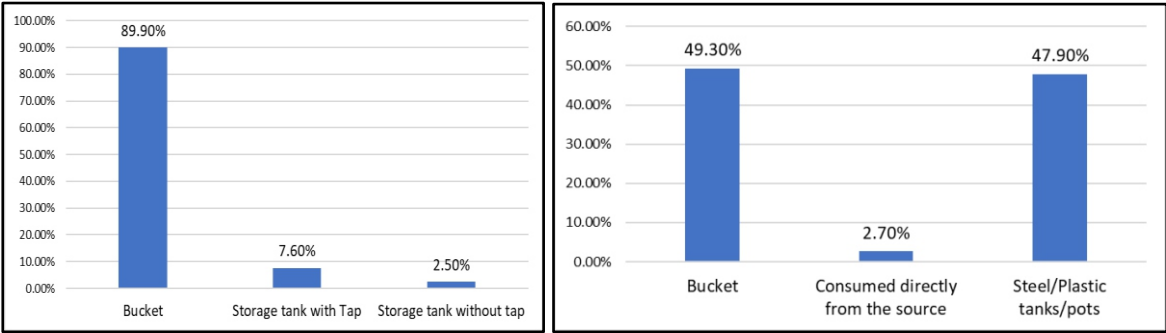


Fig. 8: Water storage at the household level pre- and post-JJM, respectively

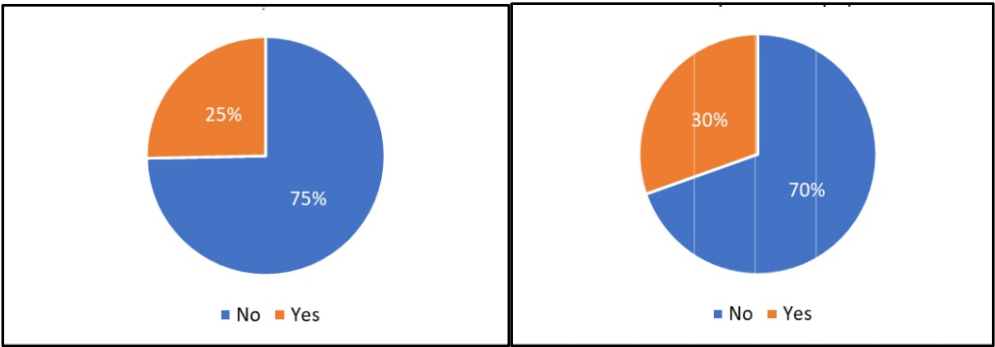


Fig. 9: Household filtration practice pre- and post-JJM, respectively

Community Participation, Accountability, and Ownership

A majority of residents are aware of the key village-level stakeholders responsible for addressing water access disruptions. The Gram Pradhan (24.1%) and the Gram Pradhan along with Jal Sakhis (25.3%) are most frequently approached, followed by Operators (13.9%). Encouragingly, a structure is in place, and many community members know whom to contact in case issues arise.

FGD discussions reinforced this, with participants highlighting the role of the operator, private

mechanics, Gram Pradhan, SHG members, and VWSC in ensuring timely water service management. While JJM has successfully strengthened institutional structures, further capacity-building efforts can ensure even broader participation, enabling all stakeholders to contribute effectively to water service management, accountability, responsibility and ownership. Expanding awareness through regular training sessions and community meetings can help ensure that every household knows whom to approach during disruptions, reducing dependency on a few key individuals.

Nearly half (49.4%) of the respondents believe that their concerns are being addressed, which indicates that mechanisms for community feedback are already in place. While 50.6% expressed that their concerns are not always resolved, this presents an opportunity to enhance existing grievance redressal mechanisms. By streamlining communication channels and making feedback mechanisms more accessible, trust in the system can be further strengthened, leading to better service delivery.

A more structured approach to grievance resolution, such as designated reporting channels, periodic follow-ups, and increased transparency, can encourage more people to report issues and feel confident that their concerns will be addressed. Strengthening these mechanisms will ensure a more responsive and accountable system that meets the needs of all community members.

The survey shows that 38% of respondents have attended O&M meetings. While there is scope for improvement, this level of participation suggests that community members are actively engaging in discussions about water management. The data also highlighted that regular meetings encouraged community participation. Among the respondents who said that regular meetings occurred, 72.4% of them also participated in O&M meetings. On the contrary, only 17.85% of the respondents participated in O&M meetings where regular meetings did not occur. The participation can not only increase a sense of ownership but can also help better understand the challenges in the water supply schemes and how to address them promptly, ensuring better O&M of the supply schemes and hence its long-term sustainability in the community. Regular attendance can encourage people to participate more, discuss issues and demand prompt responses.

Encouragingly, there is already a foundation of involvement that can be expanded through more inclusive outreach, flexible scheduling of meetings, and awareness-building on the importance of sustained participation in O&M processes.

Ensuring that meetings are accessible by scheduling them at convenient times, providing clear communication about their purpose, and demonstrating the direct benefits of participation can encourage broader involvement. Additionally, encouraging more diverse participation, including women and marginalised groups, can strengthen local decision-making and ensure that O&M efforts reflect the needs of all community members.

One of the core strengths of JJM is its emphasis on community ownership, and positive outcomes are already evident. By focusing on strengthening local leadership and ensuring that all community members feel empowered to contribute, the sustainability of water systems can be further enhanced. Providing targeted capacity-building programmes and promoting best-practice sharing between communities that have successfully established ownership models can help scale up the impact across different regions.

Ensuring the long-term sustainability of water supply systems also requires reinforcing financial planning for regular O&M, securing community contributions where feasible, and fostering collaboration between local governance structures and households. Encouraging peer learning and creating success stories from well-functioning VWSCs can serve as motivation for other communities to actively participate and take ownership.

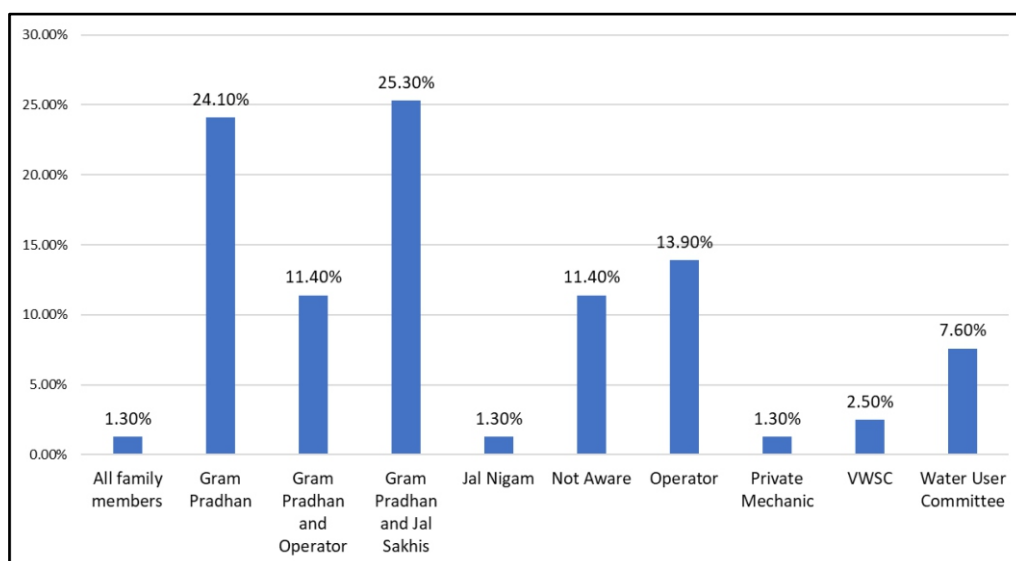


Fig. 10: Point of contact for water supply complaints, post-JJM

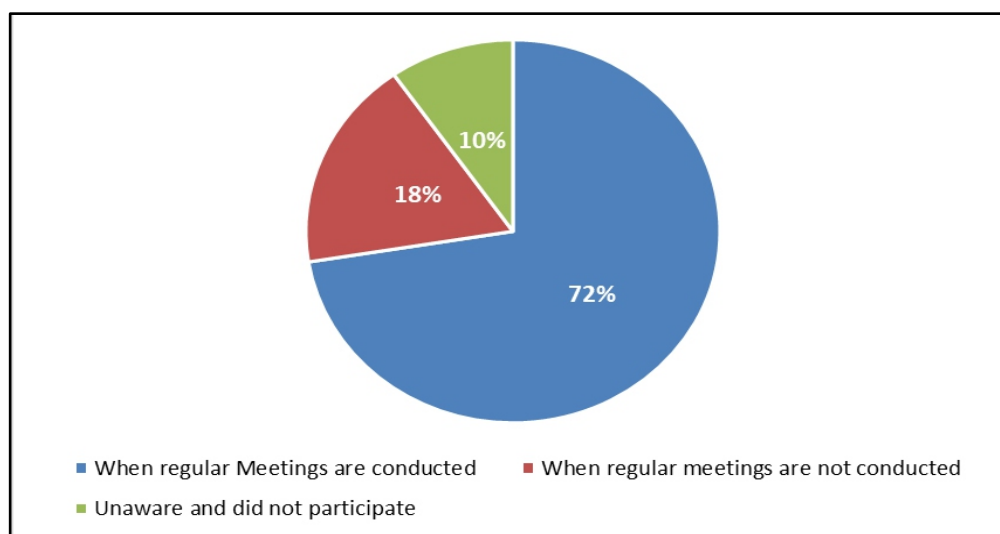


Fig. 11: Participation rate when VWSC/Jal Sakhi meetings happen

Gender Roles in Water Management

Before the implementation of the Jal Jeevan Mission (JJM), water collection was a shared responsibility among family members in most surveyed villages, though the burden often fell disproportionately on women and girls. In a few villages, female members were primarily responsible for fetching water, which consumed significant time and effort. On an average, households spent two hours a day collecting water, limiting women's ability to participate in education, income-generating activities, and household decision-making. The physical toll of carrying heavy water loads, coupled with the risks associated with travelling long distances, further reinforced gender disparities in access to opportunities. Additionally, the absence of

readily available water affected hygiene practices, often disproportionately impacting women and girls who had fewer safe spaces for sanitation.

Post-JJM, the introduction of household tap water connections has led to a profound transformation in gender roles within water management. With an average 75% reduction in time spent on water collection (from 2 hours to just 30 minutes per day), women and girls, previously burdened with long hours of water collection, now have time for education, livelihood activities, and greater participation in community life. The availability of water has improved hygiene practices, including more frequent handwashing and easier access to toilets, benefiting all family members. In communities such as at Sonaura Khurd, the health and well-being of women and children have notably improved, demonstrating the far-reaching impacts of equitable water access. However, while women’s involvement in Village Water and Sanitation Committees (VWSCs) is increasing, their meaningful engagement in decision-making and the inclusion of marginalised groups in water governance structures require further strengthening to ensure truly inclusive and sustainable water management.

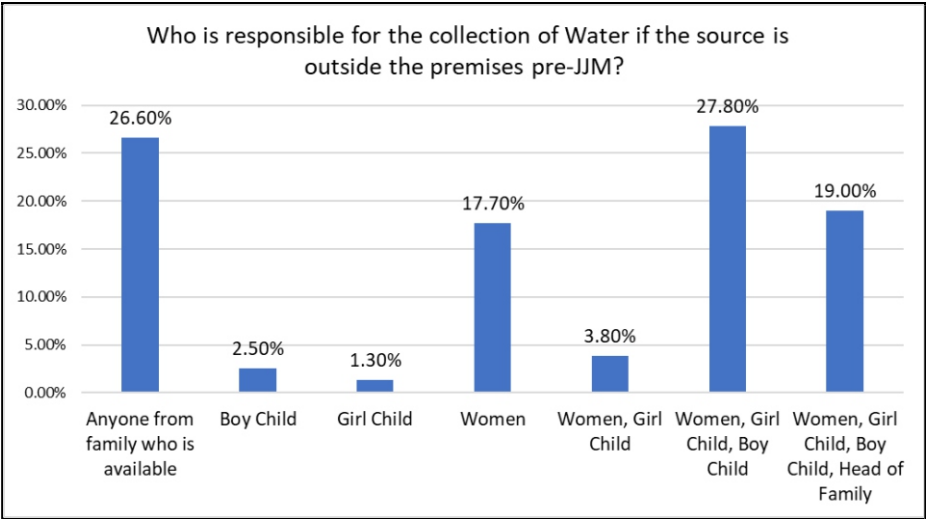


Fig. 12: Responsibility for collection of water pre-JJM (in multiple individuals options, the responsibility falls on people in the order it is mentioned)

Health Impacts

The mortality rate attributed to unsafe WASH is defined as the number of deaths from unsafe WASH in a year, divided by the population, and multiplied by 100,000. Evidence from epidemiological studies has shown that exposure to unsafe WASH is directly linked to diarrhoeal diseases, intestinal nematode infections and other diseases. Repeated diarrhoea episodes contribute to protein-energy malnutrition. There is also evidence that poor hand hygiene practices are associated with acute respiratory infections. SDG 3.9.2 estimates only include diarrhoea, intestinal nematode infections, protein-energy malnutrition and acute respiratory infections.

Recent information on the mortality rate in India attributes the exposure to unsafe WASH services as 36.4 per 100,000 population. It is anticipated that with overall improvements in not just water supply systems but also hygiene and sanitation at the societal level across India, this rate will be lowered over the coming decades.

On an analysis of the health-related morbidity statistics made available by the UP NHM, it was found that over a seven-year period from 2018 to 2024, there were no cases of cholera in the three districts. Diarrhoea and hepatitis were reported in only a few years in this time frame, and that too in insignificant numbers given the large population of nearly 14 million.

The incidence of typhoid, when seen as a rate per 100,000 population, has consistently declined over the past 7 years. Possibly this could be attributed to the general enhancement in hygiene and sanitation and not just the impact of the Jal Jeevan Mission

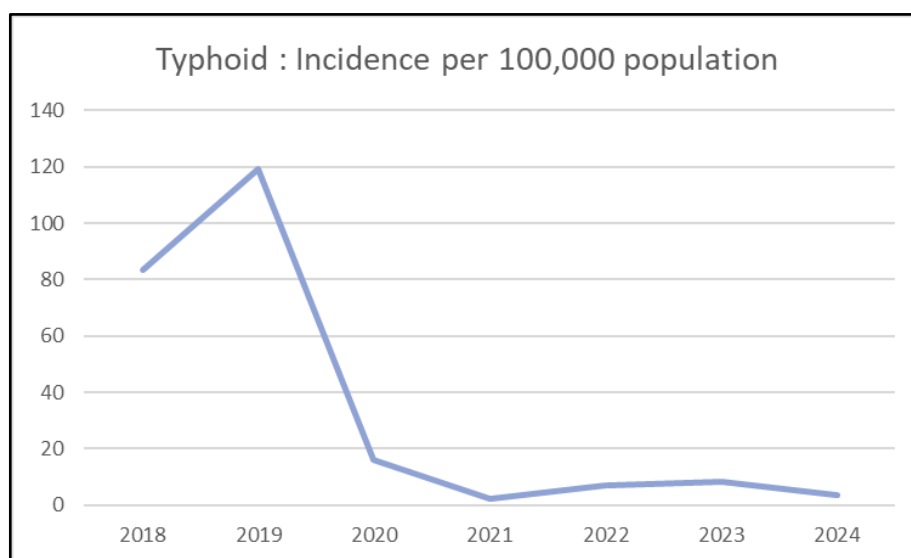


Fig. 13: Incidence of typhoid

	2018	2019	2020	2021	2022	2023	2024
Total Cases	11376	16317	2188	308	970	1122	487
Incidence Rate (per 100,000 population)	83.17	119.30	15.99	2.25	7.09	8.20	3.56

Table 3 : Incidence of typhoid 2018 to 30 Sep 2024

While it may be easy to attribute the low caseload with no real trend to the introduction of JJM in the region, the potential reasons for the low caseload could be the following:

Medical and Public Health Factors

1. Improved Sanitation
 - o Better water treatment and piped water supply through the JJM leading to increased access to clean water
 - o Enhanced sewage management

2. Healthcare Interventions
 - o Targeted vaccination programs for communicable diseases
 - o Early detection and treatment of waterborne illnesses
 - o Community health education through successful Dastak Abhiyans
3. Pandemic-Related Changes
 - o Increased hygiene awareness
 - o Social distancing
 - o Reduced community transmission of infectious diseases

Environmental and Systemic Factors

1. Water Infrastructure
 - o Upgrades in water supply systems through the JJM
 - o Reduced contamination risks due to the new system
 - o Improved water quality monitoring at the village level
2. Climate and Seasonal Variations
 - o Changes in rainfall patterns
 - o Temperature fluctuations
 - o Impact on water-borne disease transmission
3. Reporting and Detection
 - o Changes in healthcare reporting mechanisms
 - o Improved diagnostic capabilities
 - o Potential underreporting at Govt. healthcare facilities
 - o Patients may be seeking treatment from private sources which are not reported to the surveillance system

Sustainable Development Goal (SDG) 3.9.2 focuses on reducing deaths and illnesses caused by unsafe water, sanitation, and hygiene (WASH). In this context, piped water supply systems in India play a transformative role in improving public health and reducing disease burdens. Piped water systems significantly reduce exposure to waterborne diseases such as diarrhoea, cholera, and typhoid, which are major contributors to morbidity and mortality in rural India.

By providing safe drinking water directly to households, these systems ensure a reliable and clean water source, minimising contamination risks and improving overall health outcomes. Studies indicate that gaining access to piped water is associated with a notable reduction in the concentration of harmful bacteria, such as *E. coli*, in drinking water. For instance, one study found a 0.5 log₁₀ reduction in *E. coli* levels, indicating improved microbiological quality of water at the point of use. This decrease in pathogen levels directly correlates with lower incidences of waterborne diseases.

Research consistently shows that access to piped water is linked to a reduced risk of diarrhoeal diseases, particularly among children under five years old. A systematic review highlighted that households with piped water reported significantly fewer cases of diarrhoea compared to those relying on unimproved sources. The provision of safe drinking water helps prevent the transmission of pathogens that cause these illnesses.

Piped water systems reduce the distance and effort required to fetch water, making it easier for households to maintain good hygiene practices, such as regular handwashing. Increased access to clean water encourages families to use more water for hygiene purposes, which further diminishes the risk of disease transmission. However, it is essential to note that improvements in hygiene behaviours may not always be observed unless accompanied by education and awareness initiatives.

The reliability of piped water supply also matters; continuous supply systems are linked to lower rates of diseases like dysentery and typhoid fever compared to intermittent systems. Intermittent supply can lead to contamination during periods when the system is not pressurised, allowing pathogens to enter the distribution network. Ensuring a consistent and reliable supply can thus enhance health outcomes by minimising these risks.

Access to piped water not only reduces illness but also has broader socioeconomic benefits. Healthier populations incur lower medical expenses and have better productivity levels, contributing positively to local economies. Improved health outcomes lead to increased school attendance and economic opportunities, creating a cycle of positive development.

While significant progress has been made, challenges such as chemical contamination (e.g., fluoride and arsenic) in groundwater remain critical issues. Addressing these requires robust monitoring systems and sustainable management practices.

Equity and Well-being

Impact on Girl Child Education

The implementation of the JJM has brought notable improvements in girls' education, particularly by addressing WASH (Water, Sanitation, and Hygiene) barriers that previously hindered school attendance. Survey data reveals a significant increase in school-going girls post-JJM, with respondents highlighting better access to water and sanitation facilities as key enablers. The provision of functional tap connections in schools has ensured that girls no longer need to miss classes for water collection or due to inadequate sanitation. Increased hygiene levels, reduced instances of waterborne diseases, and improved availability of handwashing stations have collectively contributed to higher attendance rates and more consistent participation in school activities. Additionally, with better wastewater management and a reduction in open defecation, the overall school environment has become more conducive to learning.

FGDs further validated these findings, with some teachers observing a direct correlation between improved water facilities and higher attendance among girls. Poor sanitation, particularly the lack of clean water, had long been a barrier to adolescent girls continuing their education, especially after reaching puberty. However, post-JJM interventions have facilitated a noticeable reduction in absenteeism. Schools now provide safe, private, and functional sanitation facilities, making it easier for girls to attend regularly without concerns about hygiene. These changes are fostering a more inclusive and supportive educational environment, ensuring that more girls can pursue uninterrupted learning and break the cycle of educational disadvantage caused by poor WASH conditions.

Indicator	Percentage of Respondents
% of Respondents Shared That- There Has Been an Increased Attendance of School-going Children	85
% of Respondents Shared That- There Has Been an Increase in Girls' School Enrollment	80
% of Respondents Shared That- There Has Been a Reduction in Absenteeism Due to Water Collection	75
% of Respondents Shared That- There Has Been an Improved Health Leading to Better Attendance	70
% of Respondents Shared That- There Has Been an Improvement in School Sanitation Facilities	65
% of Respondents Shared That- There Has Been an increased Availability of Drinking Water in Schools	60
% of Respondents Shared That- There Has Been an Improved Hygiene Awareness Among Students	55

Table 4: Highlights the topics the participants mentioned independently while talking about girl child education during qualitative responses.

Gender, Labour, and Safety

Before JJM, collecting water was a time-intensive task primarily shouldered by women and girls. In many villages, female members of the household bore the responsibility of fetching water, often making multiple trips to distant sources. This daily chore limited their ability to engage in education, income-generating activities, and even household responsibilities. However, with the provision of tap water under JJM, this burden has significantly reduced. Women and girls now have more time for productive activities such as farming, self-employment, and participation in SHGs. In Sonaura Khurd, improved access to water has not only enhanced economic participation but also contributed to better health outcomes for women and children.

The shift from communal water sources such as handpumps, wells, and ponds to household tap connections has had a direct impact on women's safety and dignity. Previously, women had to travel long distances, often to isolated or crowded areas, to fetch water, exposing them to risks of harassment, public scrutiny, and physical strain. With tap water now available at home, this risk has been mitigated, allowing women to access water safely within their premises. While direct evidence on improvements in security remains limited, the elimination of public water collection points inherently reduces women's vulnerability and exposure to unsafe situations, enhancing their overall dignity and well-being.

Post-JJM implementation, women's participation in economic activities and Self-Help Groups (SHGs) has increased significantly. With better access to clean water, women spend less time fetching water, allowing them to focus on income-generating activities such as dairy farming, food processing, and small businesses. SHGs have also taken on more responsibilities, including water quality testing, sanitation awareness programmes, and involvement in Village Water and Sanitation Committees (VWSCs). In areas like Sonaura Khurd where the economy relies heavily on agriculture, improved water availability has contributed to overall economic growth, further empowering women to engage in livelihood activities and community leadership.

The data shows how women are encouraged to be more involved in the local water management process, but their participation in meetings and discussions regarding water supply is equally important.

Indicator	Percentage of Respondents
% of Respondents Shared That- There Has Been an Increased Involvement in SHGs Post-JJM	30%
% of Respondents Shared That- SHGs are Responsible for Water Testing & Awareness Programs	15%
% of Respondents Shared That- There Has Been an Improved Awareness About Clean Water & Sanitation	20%
% of Respondents Shared That- There Has Been More time for income-generating activities due to better water access	25%
% of Respondents Shared That- SHGs are More engaged in water management & livelihood programs Now	18%
% of Respondents Shared That- There Has Been SHGs training & capacity-building support, especially to Use FTKs	12%
% of Respondents Shared That- There Has Been an Increase in SHG meeting frequency	10%
% of Respondents Shared That- Water Problem resolved is Aiding Women to Participate more in SHGs	18%

Table 5: Highlights the topics the participants mentioned independently while talking about women's engagement in SHG activities during qualitative responses

Post-JJM, access to clean water and sanitation has improved. This has an indirect linkage to the overall reduction in the incidence of waterborne diseases such as diarrhoea, cholera, and typhoid observed in all the three districts, as per the data shared by SWSM. With fewer illnesses, families now spend less on medical expenses and face fewer work absences, leading to enhanced household productivity. Women, who often juggle both economic and caregiving responsibilities, now have more time and energy to engage in income-generating activities and manage their households more efficiently.

Beyond health improvements, the time saved has been a key driver of economic empowerment. Previously, women and children spent hours each day fetching water, but with the availability of tap water connections, they can now focus on education, work, and household well-being.

Additionally, better health appears to have had a ripple effect on local economies. Households that previously allocated a significant portion of their income to purchasing bottled water and covering medical expenses now experience greater financial stability, enabling them to invest more in education, nutrition, and livelihoods. Reports from various villages suggest that reliable access to clean drinking water has led to increased workforce participation, particularly among daily wage earners, who now face fewer health-related work interruptions.

Indicator	Percentage of Responses (%)
% of Respondents Shared That- There Has Been a Reduction in Medical Expenses	85%
% of Respondents Shared That- There Has Been an Increase in Productivity (Time Savings for Women & Children)	75%
% of Respondents Shared That- There Has Been an Increase in Employment Generation (Plumbing, Pipeline, Maintenance Jobs)	60%
% of Respondents Shared That- There Has Been an Increase in Household Savings (Less Spending on Water Procurement & Healthcare)	80%
% of Respondents Shared That- There Has Been an Increase in Agricultural Benefits (time to spend on agricultural fields & Kitchen Gardening)	50%

Table 6: Highlights the topics the participants mentioned independently while talking about their Perception of economic benefits during qualitative responses

Case Study: Transforming Lives Through Jal Jeevan Mission – The Story of Sanju Devi, Kotamukundpur Village, Maharajganj

In Kotamukundpur village, Maharajganj district, where Sanju Devi resides, families from Scheduled Caste (SC) and Scheduled Tribe (ST) backgrounds struggled to access sufficient water for their daily needs. While wealthier households had private wells and ponds; these were often inaccessible to marginalised communities, forcing them to rely on distant and often unsafe water sources. The lack of clean drinking water not only increased the risk of waterborne diseases but also limited educational opportunities for children and economic participation for women, who bore the burden of fetching water.

Before the implementation of the Jal Jeevan Mission (JJM), Sanju Devi and other women in her community spent several hours each day walking long distances to collect water. The only government-installed *Marka* handpump was located in another tola, making access difficult for SC/ST families. This daily struggle impacted their health and productivity, leaving little time for education, livelihood activities, or household responsibilities. Additionally, the community lacked awareness of water quality testing, increasing their vulnerability to illnesses such as diarrhoea and typhoid. With frequent health issues and high medical expenses, families remained trapped in a cycle of poverty.

The launch of the **Har Ghar Jal** initiative under JJM marked a turning point for Kotamukundpur. Every household, including those in the SC/ST community, received a functional tap water connection, ensuring access to safe drinking water at their doorstep. Alongside infrastructure development, Village Water and Sanitation Committees (VWSCs) were established to monitor water supply, conduct regular quality testing, and address community concerns. Awareness campaigns educated residents on safe water usage, sanitation, and disease prevention, fostering long-term behavioural change.

The availability of clean drinking water has nudged a reduction of the cases of diarrhoea, typhoid, and other waterborne diseases, leading to improved community health and lower medical expenses. Women, who previously spent hours fetching water, now have time for income-generating activities, childcare, and household work. Children, no longer burdened with water collection responsibilities, can focus on their education. Perhaps most importantly,

the SC/ST community, which had historically faced discrimination in water access, now experiences greater dignity and social inclusion.

Despite these successes, some challenges remain. Sustaining the benefits of JJM requires continuous maintenance of water supply systems, regular water quality monitoring, and active community participation in governance. Strengthening local water user groups and ensuring inclusive decision-making will be crucial to maintaining equitable access. Addressing these challenges can further enhance the impact of JJM, ensuring long-term water security for marginalised communities.

Sanju Devi's story is a testament to the power of inclusive policies in transforming lives. The intervention in Kotamukundpur not only improved health and well-being but also empowered women and marginalised groups, demonstrating how targeted water supply initiatives can drive social and economic change.

Linking Health, Education and Livelihood

The implementation of JJM has highlighted the crucial linkages between accessing adequate quality and quantity of piped water supply and improvement in health, education and livelihood in the Gorakhpur division study location. The section of the brief will use the framework used in the study to identify the key findings.

1. Availability and Access to Safe and Adequate Water

- Access to Improved Drinking Water Sources: 87.4% of households now have tap water access, a significant rise from 16% pre-JJM. The shift has reduced reliance on handpumps and unsafe sources.
- Water Testing: Pre-JJM, 81.3% of the population said that they were unaware of any water testing happening, but post-JJM, almost 60% of the respondents shared that they are aware of regular testing happening in their village. There has also been improved awareness of whom to reach out to for water quality and testing queries. This highlights the awareness, improved testing and improved reliance on piped water supply.
- Adequacy of Water Supply: Earlier, 53% of respondents made 3–4 trips daily, with 28.1% taking over 30 minutes per trip. Post-JJM, all respondents expressed satisfaction with the supply, receiving water for two to three hours daily.

2. Usage Behavior and WASH Practices

- Sanitation and Hygiene Impacts:
 - a) Handwashing practices: FGDs, KIIs and transect walks highlighted a similar trend across all three districts. Pre-JJM, water scarcity limited frequent handwashing, and many relied on soil or water alone. Post-JJM, respondents reported a noticeable shift towards regular handwashing with soap, especially before meals and after using the toilet. Schools and health centres now have dedicated handwashing stations, fostering better hygiene practices among students and staff.
 - b) Toilet Usage and Maintenance: FGDs, KIIs and transect walks highlighted a similar trend across all three districts. The availability of water in toilets has led to behavioural changes,

with 80% of respondents sharing that they have observed, within their family and their surroundings, a reduction in open defecation. Similarly, 50% shared that greywater management has improved.

c) Water Storage and Household Filtration Practices: 64.3% of the participants now use larger storage tanks, which was only 9% before JJM, and bucket storage was majorly used. 43.75% used some filtration method pre-JJM. However, post-JJM, it reduced to 15.6% as people thought that there was no need for filtration of JJM supply water.

- Community Participation, Accountability, and Ownership: Post JJM, there was an increased awareness of whom to reach out to for any supply-related grievances. 56.3% of the respondents shared that when they attended Jal Sakhi meetings, they raised issues, and it was addressed. The students' awareness initiative of *Jal Gyan Yatras* has encouraged students' awareness and a sense of ownership and responsibility towards their PWSS
- Gender Roles in Water Management: In 59.4% of the cases, the water collection role at the household level was on women, then girls and then boys.

3. Health Impacts

- Similar trend in all three districts. Notable decline in typhoid cases from 2018 to 2024. A key contributor to reduced disease burden in these districts is the improved water quality and hygiene.

4. Equity and Well-being

- Women, who often juggle both economic and caregiving responsibilities, now have more time and energy to engage in income-generating activities.
- Women's time burden significantly reduced, enabling greater participation in SHGs and income-generating activities.
- Increased hygiene levels, reduced instances of waterborne diseases, and improved availability of handwashing stations have collectively contributed to higher attendance rates and more consistent participation in school activities.

Findings

Piped water supply systems and initiatives such as the Jal Jeevan Mission are a cornerstone of India's strategy to achieve SDG 6, ensuring access to water and sanitation for all and SDG 3.9.2 by reducing WASH-related illnesses and deaths. Piped water supply systems are instrumental in reducing the burden of waterborne diseases through improved water quality, convenience, and hygiene practices. While challenges remain—such as ensuring continuous supply and addressing contamination risks—investing in reliable piped water infrastructure is essential for enhancing public health and achieving sustainable development goals related to health and well-being. Through initiatives like the Jal Jeevan Mission, India is making strides toward ensuring safe drinking water for all, improving public health, and fostering sustainable development.

The key findings of the current study are as follows :

1. Gender Representation and Participation in Water Management

Women (64.6%) were predominantly involved in the study, highlighting their crucial role in water management in rural households and the need to retain the focus on their participation in the Jal Jeevan Mission.

2. Improved Access to Safe Drinking Water

Post-JJM, 92% of households in villages included in the sampling framework have functional household tap connections, significantly reducing reliance on less reliable sources and improving perceptions of water quality. Maharajganj has performed the best in JJM coverage, whereas the frequency of supply was twice or more times a day in almost all locations.

3. Water Quality Testing and Awareness

JJM has introduced systematic water testing, with 70% of respondents aware of these practices. Village Water and Sanitation Committees now actively monitor water safety, although consistency in testing varies across the districts. When it comes to quality testing, Maharajganj performed remarkably well, with the highest number (78%) of respondents saying that testing occurs at their village. The close second is Kusinagar (75%), and Gorakhpur is third, with 60% of the respondents mentioning that testing occurs regularly at their village. However, in Gorakhpur, the respondents showed a high level of awareness of whom to reach out to if they face supply issues.

4. Enhanced Water Supply Adequacy

Daily water access is now available to 92% of households, reducing collection trips and ensuring satisfaction with water adequacy. Duration of supply differs slightly between districts. Respondents were satisfied with the supply and shared that disruption frequency was low. However, in the cases of disruption, the reason for disruption was primarily storage issues, and the second most frequent issue was related to pipe leakage or damage.

5. Sanitation and Hygiene Practices

JJM has improved handwashing habits and toilet usage with increased water access, reducing open defecation and thereby contributing to the hygiene and sanitation at the village level.

6. Water Storage and Filtration

While storage habits have seen change after the introduction of JJM in the region, household-level filtration has declined due to perceived confidence in piped water quality. Maharajganj showed a high level of household awareness, especially regarding sanitation and hygiene. A total of 40% of the respondents from the district said that they practised household filtration, which is the highest among other districts.

7. Community Participation and Ownership

Community structures such as VWSCs have enhanced participation and accountability. However, grievance redressal mechanisms and broader meeting participation require improvement. There are issues about operations and maintenance, including the collection of user fees. The data highlighted some interesting trends. In Gorakhpur, though, the meeting regularity was not high, and not all attended them, but active participation was highest. Many raised issues in the meeting, and respondents also agreed that their issues were resolved.

8. Gender Roles and Time Savings

Household tap water has reduced the time women and girls spend collecting water by 75%, enabling greater participation in education, livelihood, and community activities.

9. Health Impacts

JJM has indirectly nudged improvement in overall health outcomes, and reduced medical expenses, reflecting its public health benefits.

10. Impact on Education and Well-being

Improved WASH infrastructure in schools has led to higher attendance among girls, fostering an inclusive educational environment.

Best Practices

The successful implementation of the Jal Jeevan Mission (JJM) requires a combination of policy-level guidance and community-driven initiatives. The following are some of the innovative practices adopted by the State Water and Sanitation Mission (SWSM) in Uttar Pradesh that have demonstrated tangible impact on the ground and can serve as replicable models with formalised guidelines:

- During the transect walk, the field investigators observed hoardings, slogans and messages written on the pump houses, panchayat bhawan and such other public places for awareness generation under IEC activities. These messages, crafted in the local language (Hindi) and accompanied by visual illustrations, served as effective tools for community sensitisation on safe water practices.
- The Government of Uttar Pradesh organised *Jal Gyan Yatras* in all districts, involving 100 school students and their teachers (from 10 schools). Through visits to Overhead Tanks (OHTs), pump houses, Jal Nigam laboratories, and interactions with FTK-trained women, children were exposed to various aspects of the Jal Jeevan Mission. This initiative positioned children as key messengers of safe water practices within communities, marking a pioneering effort in participatory awareness building.

- During transect walks, field investigators observed that the infrastructure of old handpumps had been innovatively repurposed by colocating the JJM taps at the same location. This approach effectively integrates the new piped water supply system with the village's existing greywater drainage structures, ensuring both efficient water use and appropriate wastewater disposal
- FTK-trained women, known as *Jal Sakhis*, not only conducted water quality testing in the villages but also actively engaged with households during their visits. They used the opportunity to raise awareness about water quality and safe handling and storage practices, and share recent updates related to water supply services. This interpersonal communication fostered trust, improved community awareness, and enhanced local responsiveness to water-related issues.

Recommendations

To ensure the sustainable operation and maintenance (O&M) of piped water supply systems under the Jal Jeevan Mission (JJM) in rural India, the following evidence-based recommendations are proposed, drawing from best practices and guidelines outlined in recent reports and case studies:

1. Strengthen Institutional Frameworks

- *Integrate water management plan*: Integrate water management into Gram Panchayat Development Plans
- *Strengthen the monitoring framework*: Monitor the roles for Village Water and Sanitation Committees (VWSCs) in O&M. Formalise the existing documenting process of O&M of the water schemes.
- *Adopt Utility-Based Models*: Treat VWSCs as public micro-utilities, ensuring accountability through service-level agreements and performance audits.
- *Interdepartmental Collaboration*: Align JJM with programs like MGNREGA, Swachh Bharat Mission, and Atal Bhujal Yojana or any other schemes that may be in vogue in the region, for cohesive resource management.

2. Ensure Financial Sustainability

- *User Fee Mechanisms*: Implement tiered tariffs or flat fees for water usage, with exemptions for vulnerable households to be decided by Gram Panchayats.
- *Matching Grants*: Provide State or Central grants to VWSCs that demonstrate effective revenue collection and maintenance efforts and publicise these 'achievers' in the region.
- *Leverage Existing Funds*: Utilise MGNREGA for infrastructure upkeep and source sustainability projects like rainwater harvesting and groundwater aquifer recharge initiatives.

3. Enhance Capacity

- *Standardised O&M Protocols*: Develop guidelines for routine tasks (e.g., leak repairs, pump maintenance) and emergency responses.
- *Periodic Local Workforce Training*: Train the existing workforce regularly in plumbing, water quality testing, and system repairs to reduce dependency on external

contractors.

- Community capacity building and behaviour change: Certain interesting behavioural trends have been highlighted post-JJM in personal water management. Hence, the community engagement should also include ways to maintain household storage, judicious usage, household filtration and grey water management at a personal level to build community-wide ownership of water safety.
- *Technology Integration*: Use IoT sensors for real-time monitoring of water quality and supply continuity.

4. Source Sustainability

- Regular testing for timely intervention: Consistent water quality testing plays a vital role in promptly detecting contamination risks and enabling timely corrective actions. Enhancing real-time data collection and responsive systems will improve the adaptability of the JJM framework, contributing to stronger public health outcomes.
- *Aquifer Mapping and Recharge*: Conduct groundwater assessments and implement recharge structures like percolation tanks using innovative technologies.
- *Greywater Management*: Promote decentralised solutions (e.g., soak pits, Decentralised Waste Water Treatment Systems) to reduce contamination and conserve freshwater.
- *Climate-Resilient Infrastructure*: Deploy region-specific technologies (e.g., desalination in coastal areas, rainwater harvesting in drought-prone zones, aquifer recharge in other areas).
- Information Dissemination Mechanism: Develop information systems to regularly educate communities on water sources, contamination levels, testing protocols, and outcomes of VWSC and Jal Sakhi activities.

5. Community Engagement and Ownership

- *Participatory Decision-Making*: Involve villagers in planning, tariff setting, and conflict resolution through regular Gram Sabha meetings. Encourage community participation in VWSC/Jal Sakhi meetings to encourage behaviour change and highlight and address day to day supply issues.
- *Awareness Campaigns*: Educate communities on water conservation, hygiene, and the economic benefits of sustainable systems.
- *Recognition Programs*: Reward high-performing blocks/districts within the State for innovation in water management.

6. Robust Monitoring and Accountability

- *Water Quality Surveillance*: Equip designated Jal Sakhis in villages with field test kits and link results to remedial actions (e.g., filtration for contaminants).
- *Performance Metrics*: Track functionality rates, downtime incidents, and user satisfaction.
- *Third-Party Audits*: Engage independent agencies to evaluate system efficiency and financial transparency.

Key Challenges to Address

- *Chemical Contamination*: Strengthen testing labs and remediation plans for fluoride/arsenic-affected areas.
- *Intermittent Supply Risks*: Ensure uniform pressure distribution through innovative technologies to prevent contamination during low-flow periods.
- *Mandating Greywater Management*: Introduce decentralised or centralised greywater treatment infrastructure, such as soak pits or other nature-based solutions, based on local topography and settlement patterns.

By adopting these measures, Uttar Pradesh's JJM implementation can transition from merely a supply-driven, infrastructure-based scheme to a demand-driven, long-term service delivery model, ensuring equitable access to safe water while aligning with SDG 6 (clean water and sanitation) and contributing to SDG 3 (health and wellbeing). Success hinges on collaborative governance, community ownership, and adaptive management.

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Annexure -1

No.	Image	Description
1.		Community handpumps and standposts are used by villagers as an alternative source of water, especially when HHs don't have personal handpumps.
2.		This image shows a household tap and how some villages are wary of water theft or theft of the metal tap.

3.



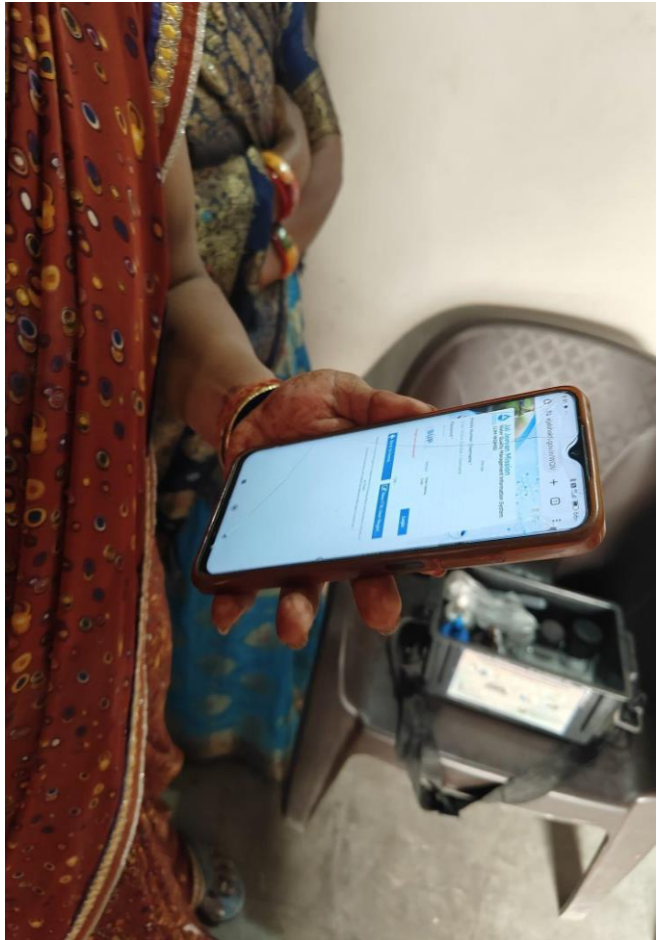
This image shows how JJM taps are located at households along with a raised platform to drain the greywater.

4.



The field investigators closely examine the JJM tap to assess its functionality, usage, and the drainage of greywater.

In this instance, the infrastructure of the old handpump has been innovatively repurposed by collocating the JJM tap at the same location. This approach integrates the new water supply system with the village's existing greywater management structures, ensuring efficient water use and disposal.

5.		This household image shows the importance of maintaining the surroundings of the water source. Here the soakpit is clogged, which leads to water stagnation.
6.		A wide landscape view of a water tank.
7.		Pani samiti members showing how they upload the water test reports in the JJM-WQMIS

8.



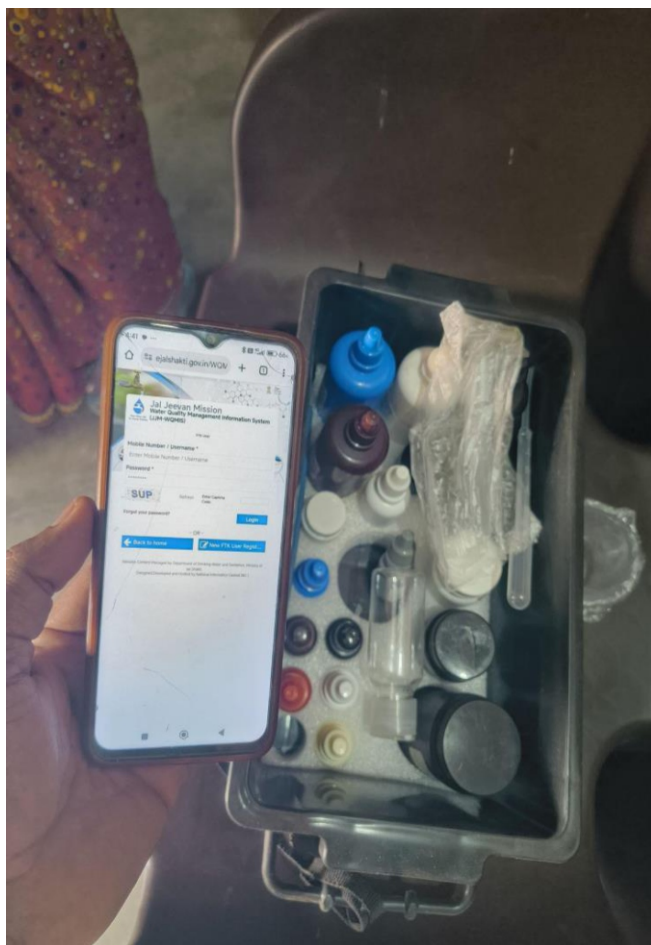
Pani Samiti member showing the field investigators the water kits they receive and how they maintain a physical record of it in the register.

9.



Villagers and field investigators are in front of the ANM center and a wall painting for the villagers about JJM and supply timings and the contact people to reach out to in case of any query or support.

10.



A closer look at the the FTK

11.



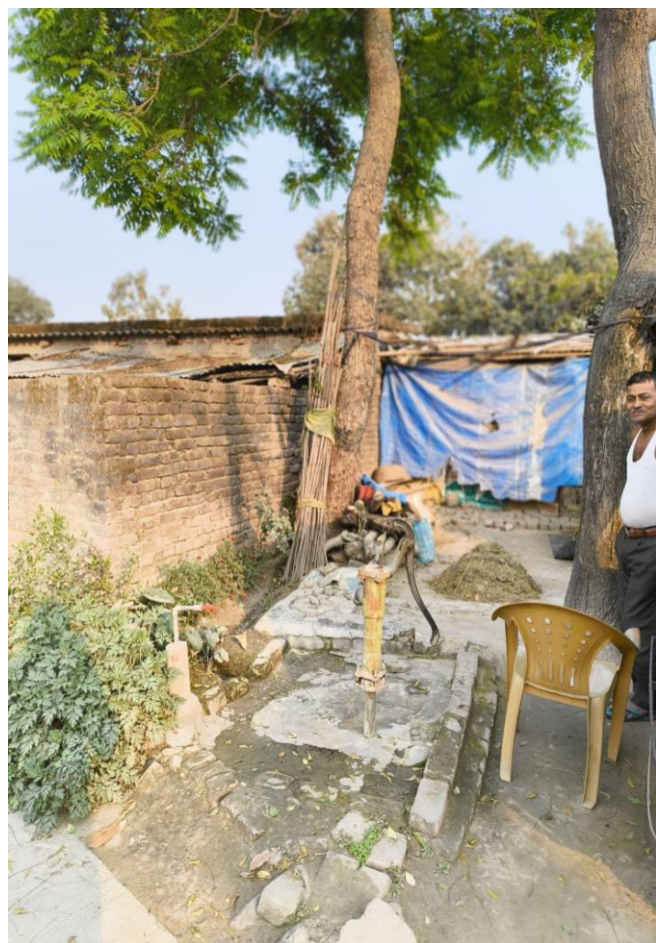
A positive wall art, creating awareness in the community while addressing its need and importance to tackle gender issues and the health of children.

12



A snapshot of one of the Focused Group Discussion

13.



A picture from a household showing the JIM tap located with an old hand handpump personally installed by the family a long time back. The family does not prefer using the handpump water because of contaminated water and has kept it as the handpump last.

IMPACT OF UTTAR PRADESH JAL JEEVAN MISSION IMPLEMENTATION ON WATER-BORNE DISEASES, HEALTH & HYGIENE FROM A WASH PERSPECTIVE

A RAPID STUDY CONDUCTED BY WATERAID INDIA FOR THE STATE
WATER AND SANITATION MISSION OF GOVERNMENT OF UTTAR
PRADESH

JANUARY - MARCH 2025

Health, Education and Livelihood: Jal Jeevan Mission's Multidimensional Impact

The study findings highlight how the Jal Jeevan Mission (JJM) in the Gorakhpur division (specifically, the districts of Gorakhpur, Maharajganj, and Kushinagar from the Gorakhpur division) has not only improved access to quality water but also acted as a catalyst for improving public health, education, gender roles, WASH practices and behaviour, and livelihood opportunities. The findings are based on the qualitative data collected during Focused Group Discussions (FGDs) and Key Informant Interviews (KIIs). The data suggests that safe water access has played an important role in supporting broader **social, economic, and behavioural shifts**, contributing to improvements in overall community well-being.

1. Education:

The implementation of JJM has significantly improved school environments, improved attendance and participation, and improved hygiene practices by addressing critical Water, Sanitation, and Hygiene (WASH) barriers:

- **Increased Girls' School Attendance:** Survey data and field observations reveal a marked rise in school-going girls post-JJM. With reduced need to fetch water and improved sanitation infrastructure at their schools, girls are attending school more regularly.
- **Adolescent-Friendly Facilities:** Schools now provide safe, private, and functional sanitation facilities. This has been particularly impactful for adolescent girls, who previously missed school during their menstruation due to the lack of water at their schools.
- **Hygiene Infrastructure:** The better access to water in the school handwashing stations and functional tap connections has improved hygiene practices. The access to water has encouraged students to wash their hands regularly, nudging behaviour change. The better access to water at schools and homes has reduced absenteeism linked to illness or poor sanitation.

These improvements have fostered a more inclusive and supportive learning environment, helping girls break the cycle of educational disadvantage linked to poor water and sanitation conditions.

2. Health: Breaking the Cycle of Disease and Economic Vulnerability

The availability of improved water sources and sanitation facilities appears to have supported better health outcomes in the communities.

- **Decline in Waterborne Diseases:** The incidence of diarrhoea, cholera, and typhoid has decreased significantly between 2018 and 2024. One of the key contributing factors is the improved water quality, reliable access to tap water, and strengthened hygiene practices.
- **Lower Medical Expenses and Improved Well-being:** Reduced disease burden has led to lower out-of-pocket medical costs and fewer workdays lost to illness, improving household resilience.
- **Cleaner Living Environments:** Enhanced wastewater management and reduced open defecation have not only improved health outcomes but also made schools and public spaces more sanitary.

3. Livelihood: Empowering Women and Strengthening Local Economies

The study also found evidence of positive changes in how people, particularly women, allocate their time and engage in economic activities.

- **Time Saved, Productivity Gained:** Pre-JJM, women and girls often spent hours daily fetching water, often multiple times a day. Post-JJM, this time is now redirected to education, household care, and income generation.
- **Economic Empowerment of Women:** With more time and better health, women are increasingly engaging in self-help groups (SHGs), small businesses, and agricultural activities. Which has improved their financial liberty. The responses highlight how women are becoming more confident to step outside and engage in income-generating activities. Their increased participation in the SHG platform and other public spaces has also improved their awareness about water quality and access. Additionally, training in Field Testing Kits (FTKs) for water quality monitoring has emerged as a source of income for some women, further contributing to household earnings and local water governance.
- **Increased Workforce Participation:** Reliable water access has enabled more consistent labour force engagement, particularly for daily wage earners who previously faced illness-related disruptions.
- **Financial Stability:** Households now spend less on purchasing bottled water and medical treatment, allowing for increased investment in nutrition, education, and livelihoods.

The implementation of JJM in the Gorakhpur division has led to noticeable improvement in health, education, and economic indicators. While water infrastructure improvements are the primary intervention, the outcomes suggest broader health, social and economic impacts.