



"Waiting for the Tanker": A Qualitative Study on Water Scarcity, Daily Survival, and Gendered Labor in Kusumpur Pahari, Delhi

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Abstract

This qualitative study examines how women, adolescent girls, and older women in Kusumpur Pahari, an urban slum in Delhi, manage chronic water insecurity under a fortnightly, tanker-dependent water supply. Using semi-structured interviews with 18 respondents across three age-based groups (six adult women, six adolescent girls, and six older women), the study explored how households organise water collection, storage, and rationing, and how this labour shapes women's physical health, emotional wellbeing, and daughters' education. Thematic analysis of the interview data produced twenty codes organised into six themes: water collection routines and household mobilisation; priority-based allocation and conservation; the gendered burden of water labour; physical health burden; emotional and psychological impact; and the need for structural solutions. Findings show that water insecurity functions less as an isolated resource shortage than as a structuring condition that reorganises household time, labour, and expectation around an unpredictable external supply, with women and girls bearing a disproportionate share of the physical, emotional, and educational costs. Adolescent girls described lost school time and constrained aspirations linked directly to water collection duties, while men's involvement remained occasional and largely confined to heavy lifting. The study extends existing, largely rural-focused literature on gendered water labour to an urban informal settlement minutes from some of Delhi's wealthiest neighbourhoods, arguing that progress toward SDG 6 in such settlements cannot be separated from the gender inequalities embedded in daily household water management.

Keywords: *Water Insecurity; Gender; Urban Slums; Adolescent Girls; Delhi; Qualitative Research; Thematic Analysis*

1. INTRODUCTION

Sustainable Development Goal 6 aims to achieve universal and equitable access to safe and affordable drinking water by the year 2030; however, it remains a major challenge, especially when it comes to urban slums. The fundamental barriers to accessing water include not just monetary or technical barriers but also legal, institutional, and political ones (Subbaraman & Murthy, 2015).

Access to safe water is not only an environmental and public health issue but also a significant social and gender equity concern. Across many developing regions, the responsibility for securing household water falls predominantly on women and girls due to long-standing cultural and societal norms. The time-intensive process of collecting water from distant sources exposes them to physical exhaustion, health risks, and reduced opportunities for education, employment, and community participation. As a result, water scarcity disproportionately affects women's quality of life and socioeconomic empowerment. Women's lives are intertwined with fetching water, which in many areas requires them to travel long distances. (Ray, I. 2007)

Research indicates that reasonably easy access to drinking water is especially crucial for girls' education, because it frees them to attend school rather than fetch water (Koolwal & van de Walle, 2013; Nauges & Strand, 2017). Illnesses related to unsafe drinking water can result in medical expenses that consume a significant share of household income, and families with an ill adult in the home, as well as those who care for them, are likely to be less productive. Access to clean water can improve educational participation among girls and reduce the illnesses and injuries sustained while travelling to fetch water or to find a place to defecate. Additionally, access to medical facilities and safe water encourages clean delivery practices and reduces neonatal mortality. In areas

where potable water is readily available, infant and child morbidity and mortality rates fall considerably, since mothers spend less time fetching water and can devote more time to children's well-being. Furthermore, women and girls who have access to water closer to home are less likely to experience sexual harassment and assault, because they do not have to travel far to obtain it (Pommells et al., 2018; Sommer et al., 2015).

Women therefore carry a double burden. The urgency of extending reliable and affordable access to drinking water to the 1.2 billion people who lack it, mostly in the developing world, is by now accepted and understood well beyond the world of water professionals. The most common constraint identified by studies from around the world is that women typically lack formal or enforceable rights to irrigation water. In a pioneering study of land rights in India, Agarwal (1994) showed that women were denied access to a range of social and economic opportunities because these were available primarily to the formal holders of land.

Without reliable and accessible sanitation, individuals are exposed to an array of social, psychological, and physical risks. More than half of the world's population, some 4.2 billion people, lack safely managed sanitation services in which human waste is safely treated and disposed of; 2 billion of these still lack even a basic sanitation facility, and 673 million have no toilet access at all and practise open defecation (WHO & UNICEF, 2019). It has been estimated that 6.3% of deaths globally could be prevented by improving water, sanitation, and hygiene (Prüss-Üstün et al., 2008). Examining the level of sanitation within developing countries elucidates how consequential inadequate sanitary conditions are for both the physical and the social environment. Attention to this issue has been directed at several countries in South and Southeast Asia, including Indonesia, the Philippines, Malaysia, and India.

Water security refers to the ability of a population to ensure consistent access to sufficient quantities of acceptable-quality water for sustaining livelihoods, enhancing human well-being, and promoting socio-economic growth; for providing protection against water-borne pollution and water-related disasters; and for conserving ecosystems in an environment of peace and political stability.

The necessity for sustainability in water security is evident in the Sustainable Development Goals (SDGs), a collection of 17 objectives and associated targets established by UN member nations to more effectively align social, economic, and environmental development by 2030. Besides a dedicated water security goal (SDG 6), water-related targets are present across the other goals: for instance, Target 1.5 (lower exposure and susceptibility to climate-induced extreme events), Target 2.4 (robust agriculture resilient to floods and droughts), Target 3.3 (tackling waterborne illnesses), Target 11.5 (mitigating the economic effects of water-related disasters), SDG 14 (life in aquatic environments), and Target 15.1 (protection, restoration, and sustainable management of freshwater ecosystems).

In numerous countries, water security is distinctly gendered, with women and girls predominantly shouldering domestic duties such as collecting and managing household water supplies as well as caring for the family (SDG 5.1; 5.4) (Kayser et al., 2019), while productive responsibilities such as agricultural production are more complex (Doss et al., 2018). These gender-specific roles, along with insufficient access to adequate water, sanitation, and hygiene (WASH), carry distinct implications related to sex and gender. In other words, attaining SDG 6 significantly aids progress towards the targets of SDG 5.

Following the conclusion of the Millennium Development Goals in 2015, the United Nations Rio+20 Summit in Brazil in 2012 pledged to create a framework of sustainable development goals to steer global progress toward sustainability (Glaser, 2012). The United Nations subsequently passed Resolution 70/1, *Transforming Our World: The 2030 Agenda for Sustainable Development*, which sets out 17 SDGs and associated targets to be accomplished by 2030 (UN, 2015). Goal 6 is to ensure the availability and sustainable management of water and sanitation for all (UNSDSN, 2013). Key challenges for Goal 6 involve water scarcity, the availability of safe drinking water, sanitation, water quality, flood threats, and cross-border water issues. Reaching Goal 6 and tracking its targets requires a thorough evaluation of global water resources that addresses these challenges in an integrated way. Nonetheless, only a limited number of studies have attempted to create integrated assessment frameworks; instances include the water poverty index (Sullivan, 2002) and subsequent water vulnerability indices. More recently, the relationship between people and water has been examined broadly under the concept of water security (Gunda et al., 2015).

Worldwide, women and girls bear the majority of the responsibility for obtaining water, distributing it, and carrying out associated household duties. Water insecurity, defined as the inability to access and benefit from affordable, adequate, reliable, and safe water (Jepson et al., 2017), carries extensive negative effects on social and economic well-being as well as on nutrition and health (Rosinger & Brewis, 2020). These consequences are unevenly felt by women and girls, who worldwide take on the primary responsibility for water collection, distribution, and associated domestic duties (Sorenson et al., 2011). A limited but growing body of research

suggests that water insecurity also heightens the likelihood of gender-based violence against women (Tallman et al., 2023). The United Nations categorises gender-based violence as harm inflicted on a person or group because of their gender and emphasises that gendered power imbalances expose women and girls to various forms of violence.

Although the provision of sanitation in India has garnered significant attention, sanitation-related violence against women (VAW) is frequently overlooked in research and regulation. Sanitation-related violence demonstrates the links between the types of sanitation facilities accessible, slum geographies, and uneven intra-slum interactions of gender, caste, economic status, and marital status. Women's experiences of VAW are shaped by these intersecting identities, and women frequently attribute blame to men from "outside" or "other" communities, which hinders their capacity to act as a united group against violence (Kulkarni et al., 2017).

1.1 Urban Slums in India

India is home to one of the world's largest urban populations, and rapid urbanization has resulted in the expansion of informal settlements across major cities. Urban slums are characterized by overcrowded housing, inadequate sanitation, poor waste management, insecure tenure, and limited access to basic services such as healthcare, education, and safe drinking water. Despite their proximity to urban infrastructure, these communities often remain excluded from reliable public utilities, creating significant disparities in living conditions. Water insecurity is particularly pronounced, with many households relying on intermittent communal sources, tankers, or untreated groundwater to meet their daily needs.

The consequences of inadequate water access extend beyond physical health. Irregular water availability forces families to ration consumption and store water in household containers, increasing the risk of microbial contamination. Women and girls bear a disproportionate share of this burden, as they are primarily responsible for collecting, transporting, and managing household water supplies. Time spent waiting for water deliveries or travelling to collection points often reduces opportunities for education, employment, and economic participation. Consequently, the challenges of water insecurity in urban slums are closely linked to broader issues of poverty, gender inequality, and public health.

1.2 Kusumpur Pahari: An Urban Slum in the Heart of Delhi

Situated in the heart of Delhi, Kusumpur Pahari is a densely populated urban slum that exemplifies the persistent inequalities in access to essential services within India's rapidly developing cities. Despite being surrounded by modern residential and commercial infrastructure, the settlement lacks an active household water supply network. Residents depend almost entirely on public water tankers, which supply water only at designated times. This irregular supply often results in long queues, uncertainty regarding water availability, and insufficient quantities to meet the daily needs of families.

The absence of piped water compels households to store water for prolonged periods, increasing the likelihood of contamination during storage. Overcrowded living conditions, inadequate sanitation facilities, poor drainage, and improper waste disposal further exacerbate the risk of waterborne diseases. Limited financial resources also restrict residents' ability to purchase conventional household water purification systems, leaving many families dependent on untreated or inadequately treated water. These challenges make Kusumpur Pahari a representative case of the water insecurity experienced by many urban informal settlements across India and underscore the need for affordable, practical, and sustainable interventions.

1.3 Aim of the Present Study

The present study aims to explore the lived experiences of women and adolescent girls in Kusumpur Pahari, Delhi, in navigating chronic water scarcity under a fortnightly tanker-based water supply system. Specifically, it seeks to examine how the responsibilities of water collection, storage, and household water management are organised within families, the ways in which these responsibilities produce physical, emotional, and temporal burdens for women, and how water insecurity shapes the everyday lives, educational experiences, and aspirations of adolescent girls. By centering the voices of those primarily responsible for household water management, the study aims to contribute to a deeper understanding of the gendered dimensions of urban water insecurity within informal settlements. In doing so, it brings an urban lens to a body of work on gendered water labour that has focused largely on rural India, documenting the experience of a community that sits at the centre of Delhi yet remains excluded from basic water security.

2. METHODOLOGY

2.1 Research Design

This study adopted a qualitative, exploratory research design to examine the lived experiences of women and adolescent girls managing household water insecurity in Kusumpur Pahari, an urban informal settlement in Delhi. A qualitative approach was selected because the objective was to understand how water scarcity is experienced, organised, and given meaning within households, rather than to measure its prevalence or distribution. The design is interpretive in orientation, treating respondents' accounts of daily water management as the primary source of evidence.

2.2 Setting

Data was collected in Kusumpur Pahari, a densely populated informal settlement in south Delhi that lacks a piped household water supply and depends on public water tankers delivered on an irregular, approximately fortnightly basis. The settlement is situated within close proximity to some of the city's most affluent residential areas, a contrast that formed part of the rationale for site selection. Fieldwork was conducted in the month of June, 2026.

2.3 Sampling and Recruitment

Purposive sampling was used to recruit respondents who held direct responsibility for household water collection, storage, or allocation. To capture generational variation in how water responsibilities are learned, carried out, and experienced across the life course, respondents were stratified into three age-based groups of six participants each, giving a total sample of eighteen:

Adult women aged 20–45 years (W1–W6)

Adolescent girls aged [13–18] years (AG1–AG6)

Older women aged [above 45] years (OW1–OW6)

Respondents were approached in the settlement with the assistance of community volunteers, and recruitment continued within each group until six respondents meeting the inclusion criteria had consented to participate. Inclusion criteria were residence in Kusumpur Pahari, dependence on the tanker supply, and personal involvement in household water management. Households were varied where possible in size and composition to avoid drawing all respondents from a single lane or extended family. Male household members were not interviewed, as the study was designed to centre the perspectives of those carrying primary responsibility for water labour; this is acknowledged as a limitation.

2.4 Data Collection

Data were generated through individual semi-structured interviews conducted face to face in respondents' homes or in a quiet location within the settlement chosen by the respondent. Interviews were conducted in Hindi by the researcher and lasted approximately 20–30 minutes each.

A semi-structured interview guide was developed for the study and organised around five domains: (a) water collection routines and the household's response to tanker arrival; (b) storage, rationing, and allocation practices; (c) the division of water-related labour within the household, including the roles of men and boys; (d) physical and emotional effects of water collection and scarcity; and (e) perceptions of what would constitute an adequate solution. A parallel version of the guide for adolescent respondents included additional questions on schooling, study time, and future aspirations. The guide used open questions with non-directive follow-up prompts, and the order of questions was varied to follow the flow of each conversation.

Interviews were audio-recorded with permission and transcribed and transcripts were translated into English for analysis. Translation was checked against the original responses to preserve the respondents' phrasing, and quotations reproduced in this paper retain the sense and register of the original Hindi as closely as possible.

2.5 Data Analysis

Interview data were analysed using reflexive thematic analysis following the six-phase approach set out by Braun and Clarke (2006): familiarisation with the data; generation of initial codes; searching for themes; reviewing themes; defining and naming themes; and producing the report. Coding was inductive and semantic in the first instance, staying close to respondents' own descriptions, with latent interpretation introduced at the theme-development stage. Transcripts were read in full before coding began, and codes were compared across the three respondent groups to identify both shared patterns and generational differences. Initial codes were collated and refined into candidate themes, which were then checked against the coded extracts and the full data set for internal

coherence and distinctiveness. This process produced the 20 codes and six themes presented in Table 1, together with the distribution of respondents contributing to each code.

2.6 Ethical Considerations

The study was conducted in accordance with the principles of voluntary participation, informed consent, confidentiality, and the avoidance of harm.

For adult respondents (W1–W6 and OW1–OW6), informed consent was obtained prior to participation. The purpose of the study, the voluntary nature of participation, the intended use of the data, and the right to decline any question or withdraw at any point without consequence were explained verbally in Hindi. Because levels of literacy varied among respondents, consent was recorded verbally and the information was read aloud in full in all cases.

All adolescent respondents (AG1–AG6) were minors. For this group, a two-stage procedure was followed. Written informed consent was first obtained from a parent or legal guardian, who was given the same explanation of the study's purpose, procedures, and confidentiality protections. The adolescent's own informed assent was then sought separately, in language appropriate to her age, and only respondents who gave assent were interviewed. Adolescent respondents were told explicitly that they could decline to answer any question, could stop the interview at any point, and that neither refusal nor withdrawal would be reported to their parents or to their school. Interviews with adolescents were conducted at a time and place agreed with the guardian, in a setting that allowed the respondent to speak without being overheard by household members, while remaining within sight of the home so as not to place the respondent in an unfamiliar or unsafe situation.

Confidentiality was protected throughout. No names, addresses, house numbers, school names, or other direct identifiers were recorded during data collection, and respondents are referred to throughout this paper only by non-identifying group codes (W1–W6, AG1–AG6, OW1–OW6). Where quotations are reproduced, they are attributed only to a respondent code and, where contextually necessary, to a broad age band and household size. Any incidental detail that could allow a respondent to be identified within the settlement was removed or generalised at the transcription stage. Interview materials were stored securely and access was restricted to the researcher. No incentives were offered for participation. Where respondents disclosed distress during interviews, the interview was paused and the respondent was given the option to stop; no interview was terminated on these grounds.

3. RESULTS

Table 1: Themes, codes and respondent distribution – Kusumpur Pahari household water study

Theme	Codes/Keywords	Description of Theme
1. Water collection routines and household mobilisation	Listening for the tanker / no fixed timing	Tanker arrival follows no fixed schedule, so households remain alert throughout the day and listen for the horn that signals its approach. Daily activities are interrupted the moment the tanker arrives; families drop everything and join the queue quickly for fear of running short. Every available container is filled and drinking water is stored separately, because the timing of the next supply is uncertain.
	Immediate mobilisation and queuing	
	Maximising storage	
2. Priority-based allocation and conservation	Drinking and cooking prioritised	Water is allocated by necessity: drinking comes first, cooking second, and cleaner water is reserved for sick or vulnerable members.
	Restriction of domestic activities	Bathing, laundry and household cleaning are reduced, postponed or stopped as supplies decline.
	Rationing and greywater reuse	Households impose strict rations and recycle used water for cleaning floors and toilets to stretch limited supplies.
3. Gendered burden of water labour	Water management as women's responsibility	Collecting, allocating and rationing water is regarded across all respondents as women's work, and women decide how much is collected and stored.
	Early socialisation of girls; greater burden than boys	Girls learn water management by observing their mothers from an early age and carry markedly more responsibility than boys.
	Limited, emergency-only male involvement	Men assist mainly with heavy lifting, only when at home, or during emergencies, rather than sharing routine responsibility.
	Invisible, unpaid and unrecognised labour	The physical and emotional effort of water work goes largely unnoticed and taken for granted, and women are blamed when supplies run out.

Theme	Codes/Keywords	Description of Theme
	Girls' education sacrificed	Water collection delays school attendance, reduces study hours and lowers concentration, constraining girls' education and aspirations.
4. Physical health burden	Exhaustion and fatigue	Collection, especially over repeated trips, leaves respondents fatigued and less able to perform other daily tasks.
	Musculoskeletal pain	Carrying heavy containers and standing in long queues cause chronic back, shoulder, arm and leg pain.
	Heat-related weakness and reduced functioning	High summer temperatures intensify the burden, and exhaustion affects school, work and concentration.
5. Emotional and psychological impact	Fear and anxiety over shortage	Respondents continually monitor stored water and grow anxious as it decreases, worrying most about children, the elderly and the sick.
	Uncertainty from unpredictable supply	Not knowing when the tanker will arrive creates persistent unease and makes daily routines difficult to plan.
	Distress, helplessness and sleeplessness	Prolonged scarcity produces anger, helplessness and disturbed sleep, with emotional strain reported across age groups.
6. Need for structural solutions	Reliable water supply	Respondents want consistent household access rather than unpredictable, tanker-dependent supply or temporary assistance.
	Safe drinking water	Water quality is considered as important as availability, given the illness caused by unsafe water.
	Living with dignity	Reliable, safe water is associated with health, dignity and an improved quality of life.

Table 1 consists of 20 codes which were combined into 6 themes, namely water collection routines and household mobilisation, priority-based allocation and conservation, the gendered burden of water labour, physical health burden, emotional and psychological impact, and the need for structural solutions. The first theme, "Water collection routines and household mobilisation," consists of three codes, namely listening for the tanker, immediate mobilisation and queuing, and maximising storage, and pertains to the way an unpredictable tanker schedule dictates the household's day. The gendered burden of water labour was the largest theme, capturing the social construction of water collection as women's work, its transmission from mothers to daughters, and the physical, emotional and educational costs that fall disproportionately on women and girls. The final theme, "Need for structural solutions," pertains to the need for safe and accessible drinking water for all as a requirement for health, dignity and improved quality of life; when asked about structural solutions, respondent 6 (from age group 20–45 living in a large household) stated that "We're not asking for the odd bit of help. We want a supply that's regular and safe, so families can live with some dignity."

While the six themes in Table 1 can be read individually, taken together they suggest a single interpretive logic: water insecurity in Kusumpur Pahari functions less as an isolated resource shortage than as a structuring condition that reorganises household time, labour, health and expectation around an unpredictable external supply. Themes 1 and 2 describe how households absorb unpredictability through vigilance and rationing; Theme 3 shows how the resulting labour is allocated along gender lines; Themes 4 and 5 capture the embodied and psychological costs of that allocation; and Theme 6 reveals how respondents interpret the entire arrangement, not as an unavoidable hardship, but as the consequence of an absent structural provision.

The first theme indicates that the burden of water insecurity begins before water is physically collected. Because the tanker keeps no fixed schedule, households must sustain a continuous, low-level state of alertness through the day, a form of unpaid attentiveness that precedes, and arguably exceeds, the labour of collection itself. This anticipatory vigilance feeds directly into the second theme: the consistent hierarchy respondents described, in which drinking and cooking water is protected first, hygiene-related use is curtailed second, and greywater is reused last, indicates a stable household rationing logic built up in response to recurrent scarcity rather than an ad hoc reaction to each shortfall. That this ordering recurred with near uniformity across women, adolescent girls and older women alike suggests it operates as a shared, intergenerationally transmitted household norm.

The second time focuses on how water insecurity starts before people even collect the water. Since tankers arrive unpredictably, families have to stay alert and plan their day around when water might come. This has also led to a fixed way of using water: drinking and cooking come first, hygiene is limited, and leftover water is reused when possible.

The third theme, the gendered burden of water labour, sits at the analytic centre of the table, both by size, as it accounts for five of the twenty codes, and by the consistency with which it was invoked across all three respondent groups. The near-universal attribution of water responsibility to women and girls, coupled with its explicit transmission from mother to daughter, suggests that water management functions in this setting less as a household

chore than as a component of gender socialisation: something girls acquire by observation rather than instruction, and something women describe taking on not as a decision but as an assumption others made on their behalf. Set against men's and boys' consistently narrower, occasional involvement, limited largely to heavy lifting or emergencies, the data point to a durable sexual division of labour in which routine responsibility, and the mental load of tracking and rationing supply, remains with women, while men's contribution stays physical and episodic.

Themes four and five extend this gendered pattern into the domain of embodied cost. Musculoskeletal pain, exhaustion and heat-related weakness were reported disproportionately by those carrying primary responsibility for collection, while the anxiety associated with an unpredictable supply, described independently across all three age groups, suggests that water insecurity operates as a chronic, low-grade stressor rather than an episodic one. Several respondents linked this anxiety not only to their own condition but to that of dependents, including children, older relatives and the unwell, indicating that the psychological burden is compounded by a custodial dimension specific to women's position within the household.

The educational costs captured within the gendered-burden theme reinforce this reading. Adolescent respondents described being late for school, missing exams, or losing study time as a direct consequence of collection duties, while several also expressed a wish to study and build a different future, frequently framed against their observation of their mothers' struggle. Read together, these accounts suggest that water insecurity does not merely disrupt girls' everyday functioning but participates in shaping, and constraining, how they imagine their own trajectories.

The sixth theme reframes the preceding five. Respondents did not describe their situation as inevitable or request occasional relief; they articulated a claim to reliable, safe water as a matter of dignity, positioning water access as a precondition for the exercise of everyday agency over time, health, labour and, for younger respondents, education. Read as a whole, the thematic structure suggests that the burden of water insecurity in Kusumpur Pahari is cumulative rather than discrete: unpredictability produces vigilance and rationing, which is discharged through a gendered division of labour, which in turn produces embodied and psychological costs absorbed disproportionately by women and girls and, for the latter, compounds into constrained educational outcomes, costs that respondents ultimately trace back to the absence of the structural provision named in the final theme.

4. DISCUSSION

The findings of this study show that water insecurity in Kusumpur Pahari is not an occasional inconvenience but a condition that organises the rhythm of the household. Because the tanker arrives on no fixed schedule, families cannot plan around it; they remain alert through the day and respond the moment they hear it approach. When it comes, ordinary activity stops and every member with a role in collection moves at once. This pattern of constant readiness, immediate mobilisation, and maximised storage confirms that the problem residents face is not only the quantity of water but the unpredictability of its arrival. The uncertainty itself becomes a form of labour, requiring households to hold themselves in a state of preparation that competes with every other demand on their time.

Once water is secured, it is governed by a strict internal logic. Drinking is protected first, cooking second, and cleaner water is set aside for those who are ill or otherwise vulnerable. Bathing, laundry, and cleaning are reduced, postponed, or abandoned as supplies fall, and used water is recycled for floors and toilets. These practices show a sophisticated system of rationing built and sustained inside the home, largely by women, in the absence of any reliable external provision. What municipal discussion treats as a matter of delivery schedules is experienced at the household level as a continuous exercise in allocation and restraint.

The gendered character of this labour was the most consistent finding across all three groups of respondents. Adult women, adolescent girls, and older women alike described water management as women's work, a responsibility so settled that it is rarely questioned or discussed. Girls are drawn into it early, learning to store, monitor, and carry water by watching their mothers, and they carry noticeably more of the burden than their brothers. Men appear mainly at the margins, helping with heavy lifting, stepping in when they happen to be home, or acting only in emergencies. This division echoes the wider literature on water and gender, in which women hold primary responsibility for household water even where they lack any formal claim over it (Ray, 2007; Kulkarni et al., 2017). The present study adds that the same arrangement persists in a dense urban settlement minutes from some of Delhi's wealthiest neighbourhoods, which suggests that the gendering of water labour is not a rural residue that disappears with urbanisation. It changes shape rather than fading.

A further finding concerns the invisibility of this work. Respondents reported that the effort involved goes largely unrecognised, that it is taken for granted as a natural duty, and that women are held responsible, even blamed, when supplies run out despite having no control over when the tanker arrives. This aligns with accounts

of water and sanitation labour as unpaid, undervalued, and normalised across generations (Patrick et al., 2023). The moral weight placed on women, expected both to perform the labour and to absorb the fault for shortages they cannot prevent, is one of the clearer ways in which water insecurity reproduces gender inequality inside the household.

The physical toll was described in concrete terms. Repeated trips and heavy containers produced fatigue and chronic pain in the back, shoulders, arms, and legs, and long queues in high summer temperatures compounded the strain. For some respondents this exhaustion carried directly into their capacity for school, work, and concentration. These accounts are consistent with evidence that the routine of water collection imposes measurable bodily costs on women and girls and they show that in Kusumpur Pahari the harm is not confined to the moment of collection but extends into the rest of the day.

Alongside the physical burden ran a persistent emotional one. Respondents described monitoring stored water anxiously as it dwindled, worrying most about children, elderly relatives, and the sick, and losing sleep over whether the next delivery would come in time. Prolonged scarcity produced anger, helplessness, and a sense of responsibility without power, since supply depends entirely on external agencies. This dimension is frequently absent from infrastructure-focused accounts of urban water, yet it emerged strongly here and matches broader findings that water insecurity carries significant costs to mental and emotional wellbeing (Jepson et al., 2017; Rosinger & Brewis, 2020). Reading the physical and emotional strain together gives a fuller picture of what fortnightly, tanker-dependent supply demands of the women who manage it.

The consequences for adolescent girls deserve particular attention. Girls reported arriving late to school, missing it entirely on collection days, losing study hours to queues, and struggling to concentrate because of fatigue. At the same time, several expressed a clear wish to continue studying and to build a future less determined by water. The tension between aspiration and the daily claim that water collection makes on their time reflects existing evidence that reliable water access is closely tied to girls' ability to remain in education (Sommer et al., 2015). Where boys are drawn into the same labour only occasionally, the burden on girls is both heavier and more continuous, which means water insecurity does not affect the next generation evenly. It shapes what is possible for girls in ways it does not for boys.

Taken together, these findings answer the questions the study set out to examine. Women experience the fortnightly supply as a structure that governs their days; they and their daughters carry roles that are socially assigned and rarely acknowledged; the work exhausts them physically and wears on them emotionally; and it reaches into the schooling and ambitions of the youngest respondents. Across all of this, the underlying barriers are not only technical or financial but institutional and political, consistent with the argument that the right to water in Indian slums is obstructed as much by governance failures as by scarcity itself (Subbaraman & Murthy, 2015). Progress toward SDG 6 in settlements like Kusumpur Pahari cannot be separated from the gender inequalities described here, since the two are bound together in the same daily labour.

5. CONCLUSION

This study set out to understand how women in urban slums survive and manage chronic water insecurity, and what that labour costs them. The picture that emerges is of a community whose days are organised around an unpredictable tanker, and of women who hold the whole system together, deciding how water is collected, stored, rationed, and shared while absorbing the physical pain, emotional strain, and social blame that come with it. Adolescent girls inherit this responsibility early and pay for it in lost schooling and narrowed opportunity, while men remain at the edges of a task treated as women's alone.

The contribution of the study is to document this reality at the household level and in an urban setting, where the gendered burden of water is less often examined than in rural contexts. It shows that moving to the city does not lift this burden from women; it simply reshapes it around tankers, queues, and storage rather than distant wells. It also records the sharp contrast between a settlement that lacks basic water security and the affluent neighbourhoods beside it, a contrast that makes the exclusion of Kusumpur Pahari's residents both visible and difficult to justify.

5.1 Limitations

The findings should be read with the limits of a small qualitative study in mind. Eighteen respondents from one settlement cannot represent every urban slum in India, and the account is confined to women's and girls' perspectives by design. What the study offers instead is depth: a close and faithful record of how water scarcity is lived and managed by those who carry it. That record points to a clear need. Respondents did not ask for occasional relief but for a supply that is regular and safe, and they linked such a supply directly to health, dignity, and a better

life. Meeting that need will require interventions that treat reliable household water not as charity but as a right, and that recognise the invisible labour of the women who, in its absence, keep their households alive.

5.2 Future Recommendations

Building on what respondents identified as most needed, several directions for policy, programming, and future research follow from this study:

- 1) Move Kusumpur Pahari and comparable settlements from tanker-dependent to scheduled, piped household water supply, since the findings show that unpredictability, not only scarcity, drives much of the burden on women.
- 2) Invest in community-level storage and water-quality infrastructure to reduce the contamination risks created by prolonged household storage.
- 3) Extend WASH-focused gender policy attention, which has concentrated largely on rural India, to dense urban informal settlements where the same gendered burden persists in a different form.
- 4) Support schools serving such settlements with measures that offset girls' lost instructional time, such as flexible attendance or catch-up provisions on days affected by tanker deliveries.
- 5) Future research should extend this qualitative account with larger and multi-site studies, including comparative work across settlements, longitudinal tracking of girls' educational trajectories, and structured survey instruments to establish how widely the themes identified here hold; studies that directly include men's and boys' perspectives would also help clarify the limited and episodic role they describe for themselves.

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