

Sanitation Workers in an Urban Public Space: Understanding Lived Experiences through the Social Determinants Framework

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Abstract: Sanitation workers remain marginalized and disregarded, trapped in a vicious cycle of poverty and struggle despite the legislative efforts and advocacy from various organizations promoting social justice, equity, and inclusiveness. This study delves into the complexities faced by sanitation workers in Tamil Nadu through a qualitative analysis grounded in the Social Determinants of Health framework (SDH) and situational assessments. Drawing from data triangulation, including in-depth interviews, field observations, and policy reviews, the analysis explores the extent of these challenges through the lens of lived experiences. It identifies gaps in social welfare policy, existing and re-emerging barriers that threaten sanitation workers' social and economic protection. Further, the scope of the study highlights measures that can strengthen socio-economic welfare policies and promote inclusivity by improving the quality of life of the workers by addressing deeply rooted systemic marginalization and bridging gaps in existing interventions, such as the NAMASTE Scheme (National Action for Mechanized Sanitation Ecosystem, 2023-26) and Tamil Nadu's Sanitation Workers Welfare Development Scheme (2022), and contributes valuable knowledge for social work professionals and policymakers to facilitate effective implementation. The findings underscore the importance of sanitation workers and the urgent need for rights-based, inclusive frameworks that recognize them as integral to the urban ecosystem. Key recommendations include formalizing contract labour, regular medical screenings, mental health support, participatory policymaking, and structural changes such as worker-designed Personal Protective Equipment (PPE), digital grievance redressal mechanisms, and community-led waste-to-resource conversion initiatives. Combined, these measures are instrumental in achieving Global Sanitation Standards and advancing Sustainable Development Goals: SDG 3 (Good Health and Well-being), SDG 6 (Clean Water and Sanitation), SDG 8 (Decent Work and Economic Growth), SDG 10 (Reduced Inequalities), SDG 11 (Sustainable Cities and Communities), and SDG 16 (Peace, Justice and Strong Institutions).

Keywords: urban spaces; Tamil Nadu; sanitation workers; social inclusion and exclusion; occupational hazards; data triangulation; social policy; social determinants of health; sustainable development goals

Introduction

Sanitation workers play a crucial role, dedicating their labour to the welfare of society by maintaining urban public health, yet their labour often goes unrecognised. Employed by the municipalities or private firms as contractual or casual workers (Nanda, 2020; Tamil Nadu Urban Sanitation Support Programme, 2015), they frequently serve as frontline workers during

crises; facing cumulative exposure to physical risks, health hazards, and safety concerns, alongside social stigma, discrimination, and legal invisibility. Over the past decade, the Government of Tamil Nadu has increasingly outsourced sanitation services to private firms such as Neel Metal Fanalca Environment Management Pvt. Ltd, Ramky Group (Tamil Nadu Waste Management Ltd.), Srinivas Waste Management Services Pvt. Ltd, Urbaser Sumeet, Noble Eco Systems Pvt. Ltd, and other contractors, causing uncertainty for the workers, particularly those marginalised by caste, gender, and other structural barriers. Caste-based stigma and public disregard result in discrimination, affecting access and upward mobility, impacting their everyday lives. Among these firms, Urbaser Sumeet, a Spain-based joint venture between Urbaser and Sumeet Facilities Limited India (under Sumeet Group Enterprises), that focuses on global environmental services, partnered with the Greater Chennai Corporation in 2019 and rolled out operations in late 2020 to manage waste management services covering seven of Chennai city's fifteen major zones. The organization has invested heavily in modern technology and equipment, positioning itself as a leading contractor in India. However, due to the firm's focus on privatization and efficiency, concerns are raised that it might come at the cost of labor welfare and protections affecting the sanitation workers. These dynamics intersect with global developments, particularly Sustainable Development Goals 8 (Decent Work and Economic Growth) and SDG 10 (Reduced Inequalities), highlighting how social justice and sustainable urban governance have been influenced by privatization, exclusion, and structural inequalities.

The Study Background and Objectives

The study examines the lived challenges of sanitation workers employed by the Urbaser Sumeet firm on a contractual basis, focusing on their access to basic hygiene facilities and resources. Using a contextual framework of the Social Determinants of Health (SDH) framework by the World Health Organisation (WHO, 2008), the research focuses on the structural conditions such as health, education, income, caste, and gender, mediated through a situational analysis approach (Clarke, 2005) to understand the challenges through their lived experiences. These issues include governance and informal worker arrangements that frame the urban ecosystem of sanitation workers in Chennai. Despite the numerous legislations from Tamil Nadu, such as the Sanitation Workers Welfare Development Scheme (2022), which aims to improve the welfare of conservancy workers in the state, the implementation process is slow and often ineffective, as the issues and challenges faced by the workers are still unresolved. The majority of the workers take up sanitation work due to poverty, family, education, lack of employment opportunities, caste, and other structural reasons (Thangam, 2023). Hence, workers continue to suffer despite measures taken by the state and the central government. Many are unaware of the benefits they are entitled to and miss the opportunities presented to them. More effective measures and interventions are therefore necessary, which have been highlighted in the suggestions section of this paper towards the end. Also, these issues implicate constitutional commitments to equality and the right to life with dignity (Articles 15 and 21 of the Constitution of India). Even with these protections, Human Rights Watch (2014) has described Sanitation labour as a form of modern-day slavery, reflecting how deeply rooted structural inequalities persist. These conditions when improved, benefits the workers along the society, contributing to much broader developments and the achievements of sustainable goals, especially SDG 6 (clean water and sanitation), and SDG 8 (Decent work and economic growth) which interlink with , SDGs 5,4, and 3 (gender equality), (Quality education), Health and Well being).

Both global and national studies have analysed sanitation workers' health, safety, and security measures by several adopting quantitative approaches (Galhotra et al., 2023; Khatri et al., 2025;

Oza et al., 2022; Thangam, 2023), others on either mixed methods or a qualitative approach to highlight stigma, gaps in governance, access to resources and social protection challenges of the workers. (Dwivedi et al., 2023; Patil, 2024; Salve et al., 2017). Moreover, schemes such as the Employees' State Insurance Scheme (ESI) Act of 1948 and the National Action for Mechanized Sanitation Ecosystem (NAMASTE scheme, 2023), though present, illustrate how social protection measures often remain inaccessible to sanitation workers, providing a clear picture of the gap.

This study, however, in contrast, though with a smaller population, adopts a qualitative approach, viewing the phenomenon through the lens of the situational and social determinants of health (SDH) framework, effectively combining multiple dimensions that several prior studies addressed separately. The present study was conducted not only as a part of academic inquiry but also as a social work intervention measure to analyse and find the root causes of key issues by amplifying the voices of the workers to understand the extent of their challenges. It also examines how sanitation workers navigate exclusion in urban public spaces, from lack of rest zones and drinking water facilities to social stigma and spatial invisibility in Chennai, Tamil Nadu. This allows for an in-depth interrogation of inclusion in both sanitation governance and urban planning. The scope of the study identifies measures that enhance socio-economic welfare policies and promote inclusivity, and brings forward policies and further measures through collaborative efforts of stakeholders and policy makers, putting forth a set of recommendations for the well-being of the workers.

Review of the Literature and the Study Rationale

Sanitation workers are individuals who clean, maintain, operate, and empty sanitation technology/vehicles in the sanitation chain (World Bank Group, ILO, WaterAid, and WHO 2019; Oza, 2022). The GARIMA Scheme for Safety and Dignity of Core Sanitation Workers defines a core sanitation worker as “one engaged in sanitation work for at least 50 days in a financial year and registered with the Urban Local Body (ULB) or employed through a Private Sanitation Service Organization (PSSO)” (MoHUA, 2021). Workers are shaped by intersections of informality, gender, caste, and the urban infrastructure, confronting multiple challenges. This review draws on literature focused on both global and national studies using the situational analysis (Clarke 2005) approach and the SDH Framework (WHO, 2008).

Employment and working conditions

Sanitation work in India is marked by austere disparities in employment benefits and working conditions between regular and contractual workers. Thorat (2021) reported that 77% of sanitation workers in India lack formal contracts, and 72% have no access to social security. Caste-based stigma restricts socioeconomic mobility (Garg, 2019; Walters, 2019; World Bank et al., 2019). Dwivedi (2023) highlighted the absence of formal grievance redressal mechanisms and the urgent need for capacity-building initiatives. Caste and gender prejudice mean that women workers face compounded vulnerability, depriving them of proper training, usage of appropriately sized PPE, social security, and representation in workers' collectives (Kumbhare, 2020; Senthilir et al., 2020; Srivastav & Hathi, 2020). They often endure long hours, walk significant distances due to a lack of transportation, and face risks of violence (Kisana & Shah, 2021). Vakulabharanam et al. (2020) emphasized the precarity faced, including stability of tenure, spatial continuity, underscoring the need for secure employment and housing. While the International Labour Organization (2018) advocated for formalization to ensure decent work standards, including grievance redressal and social security; Policy frameworks such as the ESI

Employees' State Insurance (ESI) Act of 1948, implemented in 1952, Employees' Provident Fund (EPF, 1952), the NAMASTE scheme (Ministry of Social Justice & Empowerment, 2023), Prohibition of Employment as Manual Scavengers and their Rehabilitation Act (2013), Tamil Nadu Sanitation Workers Welfare Development Scheme (2022), Swachh Bharat Mission (2014–ongoing) demonstrate attempt of good implementation, but the literature shows sanitation workers are excluded from effective coverage.

Occupational health, safety, and equipment

WHO (2019) and CPCB (2020) reported that sanitation workers face exposure to biohazards, respiratory risks, physical injuries, biological risks, and psychosocial stress. Khatri et al. (2025) identified musculoskeletal disorders in 36% of sanitation workers, with sweepers showing the highest prevalence (38.8%), and Needlestick injuries being common among waste collectors (7.2%). Other health issues included gastrointestinal and respiratory problems, injuries, and mental health challenges (Oza et al., 2022; Jayakrishnan, 2013). Salve et al. (2017) further noted that sanitation workers are prone to infectious diseases, fatigue, stress, physical and mental distress, and premature death, emphasizing the urgent need for occupational health safeguards. Adding to this Ngatia (2023) illustrates how limited income, education, and social stigma intensify these vulnerabilities and undermine workers' dignity and safety. Ranjithkumar (2024) also argues how poverty, informal employment, caste stigma, and low health literacy shape poor health outcomes, particularly for women sanitation workers, calling for intersectoral and rights-based approaches to occupational health and social protection.

Access to sanitation and infrastructure

Access to sanitation infrastructure remains uneven and inadequate, especially for women sanitation workers. Galhotra (2023) found evidence that while the majority of Community Health Centres (CHCs) had essential (water, sanitation, hygiene, and waste management) WASH services, Only 57.1% of PHCs had basic sanitation, and 2.9% of SHCs met basic sanitation standards required. Concerning sanitation access, Rajaraman (2013) highlighted significant shortcomings for women workers, including walking long distances during shifts to use toilets, inability to maintain menstrual hygiene, and loss of wages due to menstruation-related absenteeism. These conditions reinforce gendered exclusion, further showing the intersection between gender and occupational status, creating a marginalized environment. Combined with lived experiences, shows the spatial inequalities embedded in the urban planning and governance.

Stigma, Public behaviour, and support systems

Caste stigma renders sanitation labour invisible, contributing to sustained disrespect, eroding the dignity of the workers. Ngatia et al. (2023) reported that 67.5% of sanitation workers in Nairobi's Mukuru slums experienced discrimination, with psychosocial consequences strongly resonating with Indian contexts. Residential precarity compounds these challenges, with the NSSO (2019) documenting dreary living conditions among urban informal workers, while Dwivedi et al. (2023) connected slum residences to heightened occupational vulnerabilities. Field narratives from Chennai collected during the study echoed these patterns. Workers described flood-prone commutes, shared, overcrowded toilet facilities, further blurring workplace and housing exclusion. At the same time, many sanitation workers described their work as a source of "freedom and satisfaction," challenging dominant portrayals and demanding recognition beyond victimhood. These accounts provide circumstantial evidence

that supplements existing research, underlining spatial precarity and stigma overlap in urban sanitation workings. Despite these adversities, workers actively affirm pride and dignity through communal relationships. The Self-Employed Women's Association (SEWA, 2017) documented how informal workers cultivate resilience and social recognition through collective identity, while Kabeer (2003) underscored the importance of such agency in reshaping policy narratives, arguing that workers' self-definition is critical to reframing labour justice. Altogether, this literature and narrative show that stigma is not only a social construct and a perception, but it's also a structural determinant of exclusion. By foregrounding stigma as both a barrier and resilience, the review provides a foundation for this study's focus on dignity, inclusion, and agency in urban planning and sanitation governance.

Gaps in Existing Studies

In recent years, the sanitation workers in urban India have received increased attention. During the period when this study was conducted and analysed, Sanitation workers in Chennai, Tamil Nadu, held a 75-day protest demanding job regularisation, opposing privatisation, and calling for better working conditions and protection. Despite this visibility, most state-level studies have relied on broader surveys that do not specifically target Chennai, under-researching key areas of Zone 9 and Zone 10, such as Saidapet, West Mambalam, Ashok Nagar, Kodambakkam, and Teynampet. Existing Studies concentrated largely on slums and peripheral areas, overlooking major zones, thereby highlighting spatial inequities in research and policy attention. Although some studies have employed the Social Determinants of Health (SDH) model, the focus was on the discrete concepts without fully engaging with the lived experiences of workers or the intersectional realities that shape their daily lives. To the best of the researcher's knowledge, no study has conducted a qualitative, in-depth exploration of sanitation workers' realities in Chennai using a triangulated framework that combines Situational Analysis and the SDH model (WHO, 2008). This gap is significant because it obscures the relational and structural dimensions of sanitation labor, particularly how factors like caste, gender, informality, and spatial governance interact to create exclusion and resilience. Therefore, the present study aims to fill this void by providing a comprehensive, contextually grounded account of sanitation workers' experiences in central urban areas. It captures not only the systemic barriers they face but also their agency, adaptability, and perceptions of dignity. Doing so, the study reveals critical implementation gaps, policy mismatches, and disparities between civic expectations and lived realities; insights that are essential for designing inclusive and equitable urban sanitation policies. To ensure relevance and analytical depth, the study applied clear inclusion and exclusion criteria. Literature was included with geographic relevance to urban India, with particular emphasis on Tamil Nadu. A few global studies were selected that offered conceptual insights into occupational dignity, social protection, or the Social Determinants of Health (SDH) framework. Preference was given to studies employing qualitative, mixed-methods, or policy analysis approaches. Works grounded in rights-based urban policy, SDH, and intersectionality were considered to support the study's in-depth analytical perspective. Sources included peer-reviewed journal articles, institutional reports, government documents, and policy briefs published between 2003 and 2025. The study excluded literature focused solely on manual scavenging and the specific challenges faced by workers engaged in manual scavenging, with a rural or non-urban focus, as well as international studies lacking conceptual relevance to the themes or the Indian context. Out of 52 records identified, 38 were screened according to these criteria, and 26 sources were ultimately selected after an eligibility assessment. This final selection comprised 12 peer-reviewed journals, 8 institutional and government reports, and 6 media and policy briefs.

Methodology

This study employed an exploratory research design utilizing a qualitative approach to examine the sanitation workers engaged under contract by a private enterprise named Urbaser Sumeet, operating within the Greater Chennai Corporation. A qualitative design was used to apprehend the in-depth lived experiences of the sanitation workers whose realities are often concealed in quantitative or survey-based studies. The research integrates two complementary frameworks, Situational Analysis framework (Clarke, 2005), which is used to situate sanitation work in a broader social and institutional context, with the World Health Organization's Social Determinants Model (WHO Commission on Social Determinants of Health, 2008; Solar & Irwin, 2010) to connect the workers realities to the determinants such as housing, stigma, infrastructure, and policy. This dual-framework approach facilitates a comprehensive understanding of the lived experiences of sanitation workers, highlighting structural exclusions, work conditions, worker's agency. It also reveals how the intersectionalities and spatial governance shape exclusion and resilience while highlighting implementation gaps and critical policy mismatches, thereby ensuring that the findings are relevant in achieving inclusive urban sanitation policies.

Conceptual Framework:

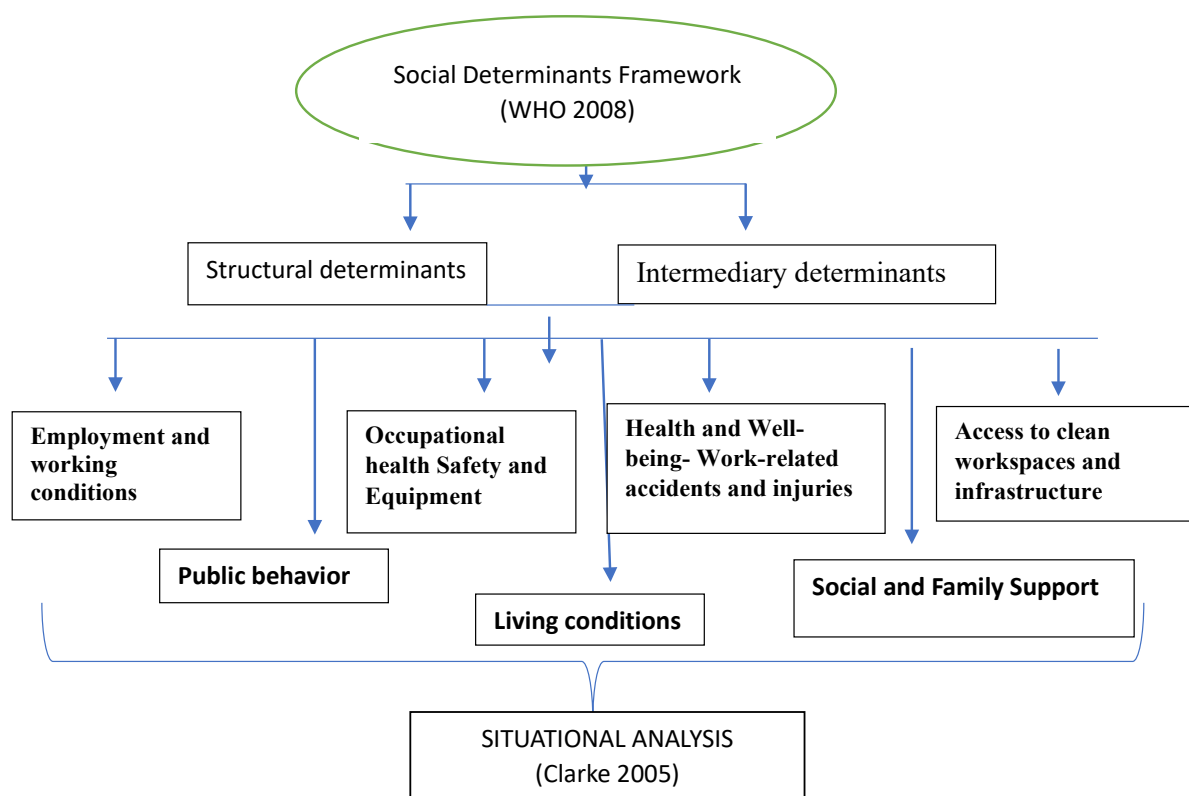


Figure 1, source- WHO SDH framework 2008, Clarke 2005.

Sampling

The study adopted a purposive sampling method to capture spatial diversity and the experiences of sanitation workers across areas of Zone 9 and Zone 10, within the Greater Chennai Corporation. The sample of the study consisted of 15 sanitation workers, 7 males and 8 females, all belonging to the scheduled caste (SC) community. Participants represented varied ages ranging from 30 to 57 years), duration of employment, and specific job roles, including sweepers and segregators. The sample size of the study was guided by the thematic saturation with attention to diversity in age, gender, and workers' job roles, to ensure a wide spectrum of experiences among the sanitation workers. The workers were included if they were actively employed in their roles, working morning shifts, and demonstrated a willingness to participate voluntarily.

Data collection and analysis

The sanitation workers who assented to participate in the study were interviewed after providing oral consent. A bilingual interview guide was prepared, drawing from the themes of both the Social Determinant framework and the situational analysis approach. In-depth, semi-structured interviews were carried out in Tamil and audio recorded with participants' permission. These interviews were conducted over two weeks, with each session lasting 45 to 70 minutes. Alongside the interview, Observational notes and informal conversations were systematically recorded during work shifts and rest breaks to capture everyday interactions and practices. The collected data were transcribed into English and thematically coded and triangulated into themes guided by the contextual frameworks used in the study. The SDH model (Figure 1) identifies the structural issues, while the situational approach contextualizes the individual responses to their lived challenges and experiences. The triangulated data integrated interviews, observations, secondary data, situational analysis lens, and representative quotes. This approach allows for cross-validation of the themes that reflect both barriers, resilience, and exclusions in the urban sanitation frame. Members' checking was informally incorporated with respondents affirming the interpretations during follow-ups, as a measure to avoid bias and ensure accurate representation of narratives. Furthermore, the study was conducted with sanitation workers belonging to the Scheduled caste, which resonates with multiple national studies (Garg, 2019; Walters, 2019; World Bank & WaterAid, 2019) depicting how stigma restricts mobility upwards and sustains occupational segregation. Aligning this with the SDH framework and SDG 10 (Reduced Inequalities), caste can be seen as a structural determinant shaping health, dignity, access to welfare schemes, and undermining equity in urban governance.

Ethical Concerns

Verbal informed consent was obtained from all participants, and confidentiality was maintained throughout the research process. Audio files were securely stored, and interviews were conducted in Tamil to ensure cultural sensitivity and comfort. These measures helped build trust and ensured that workers' voices were represented with dignity and accuracy.

Results and Discussion

The sanitation workers who participated in this study are employed as conservancy workers under the Greater Chennai Corporation, working through the private contractor Urbaser Sumeet. Within this workforce, there are different roles carried out by the conservancy workers – garbage segregators and sweepers. The sweepers are responsible for cleaning the streets,

public areas, and markets, while garbage segregators collect waste from households and commercial zones, sorting food waste and plastic waste separately. These jobs are considered moderate-risk occupations, yet the study finds that safety measures are inconsistent, leaving workers vulnerable to occupational hazards. Hence, effective safety measures should be implemented as needed. The socio-demographic profile of the respondents is mentioned in the table below, providing context for the thematic analysis of their lived experiences.

Table -1: SOCIO-DEMOGRAPHIC PROFILE

Cases No	Gender	Ages	Education	Work Category	Years of Experience	Housing Type	Earnings(Monthly) INR	Household Income role
R1	Male	35-40 years	12 th std	Garbage segregator	Over 6 years	Own	16,000	Breadwinner
R2	Male	35- 40 years	10 th std	Garbage segregator	Over a month	Rent	16,000	Breadwinner
R3	Male	30-35 years	10 th std	Garbage segregator	Over 2 years	Own	16,000	Breadwinner
R4	Female	45-50 years	No education	sweeper	over13 plus years	Rent with shared toilet	13,000	Breadwinner
R5	Female	35-40 years	5 th std	Sweeper	More than 6 months	Rent	13,000	Support
R6	Female	40 -45 years	6 th std	Sweeper	Over 15 plus years	Rent	13,000	Support and Breadwinner
R7	Female	35 -40 years	10 th std	Sweeper	Over 5 years	Rent	13,000	Support
R8	Female	30-35 years	6 th std	Sweeper	Over 3 years	Rent	13,000	Support
R9	Male	30-35 years	11 th std	Garbage segregator	Over 5 years	rent	16,000	Support
R10	Male	40-45 years	7 th std	Garbage segregator	Over 6 years	rent	16,000	Breadwinner
R11	Female	45-50 years	6 th std	Sweeper	Over 15years	rent	13,000	breadwinner
R12	Male	40-45 years	10 th std	Garbage segregator	Over 5 years	own	15,000	Support
R13	Female	45-50 years	9 th std incomplete	Sweeper	Over 15 years	Own with a common community toilet.	13,000	Breadwinner and Support
R14	Male	40-45 years	No education	Garbage segregator	Over 18 years	Rent	17,000	Breadwinner

R15	Female	55-57 years	6 th std	sweeper	Over 13 years	Rent	13,000	Support
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Source: Developed from Field Data.

This diversity in age, gender, housing, and household income reflects the vulnerabilities and resilience among the workers.

Table 2: DATA TRIANGULATION MATRIX OF SANITATION WORKERS' EXPERIENCES and Table 2A: Employment, Safety and Health Dimensions.

Themes	Sub Aspects	Primary Data (Interview)	Observational Data	Secondary Data (Policy Review)	Situational Analysis- Lens	Representative Quotes
Employment and Working Conditions	Nature of job, duration, contracts, hours, holidays, salary commuting to work	Sweepers and Garbage segregators; workers are satisfied with their employers; lack of formal contracts; 8-hour work; four days of holidays a month; and salaries are received on time. Some workers travel from far to work. Employer-provided pick-up services for the workers during COVID-19.	ID cards were provided for attendance; workers are satisfied despite the informal interactions, lack of job security, and satisfied with the working hours, shift schedule is visible; No issues with receiving salary on time, and they accept their salary as they think it's what they deserve for their education qualification. The daily commute is difficult, and the community helps at times, providing lifts and filling policy gaps. COVID-19 services provided for those far away are not for all.	(ILO) International Labour Organization (2018) on Informal work deficits, which interprets labour precarity. Gaps in Labour rights and contract regulation.	Workers are visible at work; invisible to the legal system. Symbolic legitimization through ID cards; failed guarantee of rights resulting in informality. Spatiality and positionality, and inclusion issues are seen.	<i>We don't have any formal contracts, but we have ID cards..."- case/ R15.</i>
Safety and Equipment	Availability and quality of protective equipment, quality, tools, training for safety, and procedure	Quality and Fit complaints, workers feeling uncomfortable using the PPE equipment, due to changes in the vehicle PPE equipment, are missed gloves are given twice a month, every six months, once, and shoes are provided along with masks	Frequent non-use of gloves, masks, and shoes, broken brooms, heavy trash bins, uneven roads, and occasional raincoat use Workers work with their bare hands. Conflicting views on training	The World Health Organization's Health, Safety, and Dignity of Sanitation workers (2020) specify the challenges in PPE usage. NAMASTEScheme gaps in	Safety infrastructure is reactive rather than proactive; the system neglects worker protection, discomfort, and poor design (quality and fitting) of PPE equipment.	<i>Shoes feel very big and heavy... I'm afraid I'll fall – case/R4.</i>

		and a uniform. If ill fitting, workers spend their money to buy the equipment. Training is provided for safe working and the use of equipment.	from workers' perception.	PPE provision and training.		
Work-related Accidents/Injuries	Frequency, response mechanisms, and access to care	No major incidents reported; workers have accident compensation cards; allergic reactions to gloves and shoes. Supervisors' immense support is mentioned.	No visible first aid kits are available to the workers, nor are there any in the vehicle. Workers only know how to seek out supervisors in an emergency. No proper emergency protocols. Women workers are manually lifting bins due to a lack of ergonomic tools.	The Employees 'State Insurance scheme's documentation and processes for the reporting, registering, and claiming of benefits. Weak emergency protocols. Despite ESI coverage.	Compensation is provided, but emergency protocols or preparedness are lacking, resulting in systemic neglect of occupational health.	<i>They gave me a card... for work injury, we get some amount..." Case/ R2.</i>
Health & Well-being	Insurance Welfare provisions, mental health, and work strains. Medical screenings and camps.	Mixed reports on health benefits; some mention ESI and medical camps; physical strain and lack of insurance are noted. Not caring about what others say. At times painful with shoulder aches, lack of menstrual hygiene, and hand aches.	Workers expressed being used to the smells, masks making them breathless. Physical strains. Low self-esteem is noted, and earning money for the respect and supporting family is noted as a motivational aspect. No idea regarding insurance. Exposure to waste for a long period and working with bare hands.	WHO <i>guidelines on Sanitation and Health</i> 2019; Public Health Foundation of India urban health studies on systemic neglect, on occupational health policy	Health vulnerabilities are chronic and structural, showing neglect of the workers' health and social protection.	<i>Trash bin gives me stomach pain... not easy at all." – case-R8</i>

Table 2B: Infrastructure, Public Behavior, Living Conditions, and Social Support

Access to Clean Workspaces	access to toilets, restrooms, and drinking water, sanitation infrastructure	Toilets are distant to access; not allowed/ limited access to use in the nearby facilities; limited water access; women lack changing spaces and rely on mandaps or roads.	No toilets available nearby to immediately access, lack of clean drinking water facilities, workers rest near the garbage bins or on the roadside, no designated place to change clothes, and lack of privacy.	Swachh Bharat Mission audits emphasize sanitation for women and gendered infrastructures.	Workers are denied access to basic facilities. Gendered exclusions and spatial neglect reinforce marginalization, rendering them susceptible to sexual harassment and violence, thereby reinforcing their embodied vulnerability.	We change on the road... if someone sees, they see- (Case R4)
Public Behavior	Public attitudes, stigma, harassment, recognition	Mixed responses from the public, they sometimes respect, sometimes disrespect, and help at times. Raise complaints against us.	Workers, though at times feel bad about the disrespect or ignorance shown, go on with their work as it is their work to earn money. Largely ignored, occasional verbal interactions occur when workers take a day off. Complaints were registered against them, not recognizing their efforts.	Caste stigma and sanitation labourers echoed in Reality of Sanitation Workers in India (Nigam, 2020) Bezwada Wilson's advocacy (1993- ongoing) on the dignity and rights of Sanitation workers.	Workers are shown both apathy and hostility at times. Despite their efforts, workers remain invisible.	<i>They complain... even when we're doing our job."</i> -(Case R12)
Living Conditions	Housing, income, and neighborhood safety	Mixed housing conditions; some fear displacement; others have basic amenities, communal toilets, and shared toilets. Unhygienic environment. Satisfied with their income.	No employer-provided houses; sanitation practices differ based on areas or zones, showing disparity. Workers living in an Unsafe environment with a crowded population.	Centre for Policy Research's Social Protection of Sanitation Workers (2023) addresses displacement and tenure insecurity. The Garima scheme and housing policy gaps.	Housing and labour precarity, Unsafe and unhygienic environment. Spatiality, positionality, and discursive practices are noted, yet workers are resilient in adaptation.	<i>"We can be displaced anytime... common toilet shared."</i> – case /R11.
Social and Family Support	Emotional, financial, and caregiving support from	Family is seen as primary support; a job provides emotional stability and	Workers are unaware of the benefits provided by the government for	Self-Employed Women's Association's case study (2008) on	Emotionally resilient, workers find dignity in their work despite	This job gives me freedom, rest, and

	family/communi-ty.	pride. responses handling children's education. Workers feel satisfied and dignified their job	Mixed on feel and doing	their children's education and other benefits. The family supports the worker's job. They feel the freedom, satisfaction, and happiness in doing this work despite many challenges.	emotional resilience, peer solidarity, and dignity in informal labor. Lack of integration of family welfare schemes.	systemic neglect.	satisfaction.” – (case / R1)
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Source: Derived from field data, observation notes, and policy reviews from secondary sources such as WHO, CWAS, ILO, SEWAS, and others.

Employment and working conditions

The respondents, despite expressing satisfaction with their employing office, revealed limited awareness regarding employment entitlements. None reported obtaining formal contracts and possessed only an ID card, which they used for attendance and work allotments. This clearly shows how they are invisible to urban governance and lack legal literacy. A worker shared,

“I joined this job to support my family, as we need at least two incomes to manage our household and provide for our children's education. My husband is an alcoholic, so he doesn't contribute much. I have to take care of everything; now he's no more. In this era, if you don't even have 10 rupees in hand, nobody will respect you” – Case/ R4.

Her narrative underscores how economic survival, respect for a person, eclipses all other significant matters like having contracts and other employment benefits, showcasing exclusion from labour protection. Considering salaries, workers expressed satisfaction with what they are earning (between 13,000 Rs to 17000 Rs, Table 1) and that it is sufficient to run the household. They are paid on time, and they also receive attendance bonuses if they attend all 26 days properly, with some access to the pension scheme post the age of 53. However, if they fail to attend for 26 days, they lose the attendance bonus and salary deductions in case of a sickness holiday, apart from the allotted days for holiday, unless certified by the ESI hospitals. One worker expressed,

“I earn about 16,000 Rs monthly for driving this vehicle and handling the trash. There's an attendance bonus, and I also receive extra if I meet daily targets. So, no worries about that. This is good enough to take care of the family,” case/R10.

This shows how, despite their satisfaction with what they are earning, they are bound within certain limits, like taking sick holidays or being absent to take care of their family, which will result in them losing their salary and bonus, which puts them on the pedestal. The workers are clear about their working hours, shift roles, and feel that the schedules are suitable, allowing them to spend the rest of their day with family and rest.

However, commuting to work proved to be difficult for some workers as they live quite far and had to travel either by bus, auto, or train, and had to spend at least Rs 100 on travel. The public, at times, helped them by providing lifts in their vehicles. A response from a worker says

“I come from far , I come by train, and if necessary, will get an auto. People also help us at times to come to our office or the streets assigned- case/ R11.

This underscores the spatial precarity and infrastructural neglect, as they don’t get any travelling subsidies and face economic, physical strain. Also, they mentioned how during COVID, their employer took care of them in commuting to work. Despite it being a good initiative, this service was offered only to those from far places, and those who live nearby were not offered the same, implying exclusion from the services during times of need.

Safety and Equipment

The workers receive necessary basic equipment, like shoes, a uniform, masks, gloves, brooms, and other essential tools, yet it is seen that there are issues/ gaps in procurement systems, especially for those who recently joined the workforce. noted a respondent.

“The office provides me with gloves twice a month, and once every six months, we get the shoes that are provided along with masks and a uniform for us.” – case /R7.

Another worker noted

“I joined recently, and it's been a month since then. However, I still haven't received the uniform, masks, and shoes”. – Case/R5.

The researcher noted workers wearing netted vests, which were given as a substitute for proper uniforms, and clothes were used as masks. Even when the equipment is provided, workers don’t wear it due to discomfort and feel it is unfitting to wear. Masks were described as suffocating as it circulates foul odours and make one feel breathless.

A male respondent shared,

“Whatever smell I have breathed is circulating again and again, and I find it more uncomfortable and unhygienic than wearing it. Likewise, sometimes I work without wearing gloves, too, when sorting out garbage”. - case/R14.

While others reported skin burning and allergic reactions to wearing shoes and gloves. They also shared that the plastic, when drenched in water, wafts a heavy chemical smell, which is unpleasant. These embodied different realities between policy prescriptions and the lived experiences. They were even asked to buy their shoes, gloves, brooms, and other tools from outside for INR 300 Rs, which shifts the burden of safety, additional expenses, and working conditions.

Training was inconsistent; some were taught, while experienced workers noted they were not particularly trained, as they had been doing the work for so long.

A respondent noted

“We do receive training. Whenever we are given our equipment, our supervisor holds a half-hour meeting to explain how to handle everything properly. We are also trained on safety measures, like avoiding electric wires, placing our bins carefully, and ensuring we do not disrupt the commuters. We get briefed on ways to keep ourselves safe and secure as well-“ case/R6.

This shows the disconnect between policy measures and lived realities and the urgent need for proper design of the equipment, provided frequently, and advocacy for further safety measures on prolonged use of the equipment, and sustained training.

Work-related accidents or injuries and how they are addressed

Workers expressed no major incidents and sought a supervisor and higher authority if there were any concerns. All mentioned getting a card of compensation for workplace injury, or in case of death,

one male worker noted,

“So far, nothing of that sort has happened to me. They gave me a card that is beneficial if anything happens. It has been mentioned that for work injury, we get some amount, and for death, around INR 5 lakhs something so I think it's alright. When the vehicle we drive is in bad condition, the company takes care of it. Our supervisor takes care of everything when we tell him about it”- case/R10.

However, they are unclear about the eligibility, claims, and other procedures, showing their lack of awareness, and supervisors, being the first point of contact, exhibit workers' reliance on interpersonal trust rather than proper protocols for emergencies. One worker mentioned how her colleague was affected by wearing the gloves, leading to her resignation from the job. But no follow-ups were made as these workers are contract workers, specifying the lack of institutional accountability and systemic gaps in occupational health protocols. Also, the workers mentioned and normalized the ad hoc possibilities and services provided for them, and were satisfied with the job, like pick up services and being treated well during the COVID period, and rain and weather issues.

Access to Clean sanitation and work environment

When this question was posed, all respondents indicated no significant issues with access to clean sanitation. However, after further probing, the researcher uncovered the complexities surrounding this issue. It became evident from Table 2 that there are patterns of discrimination, a lack of awareness regarding human rights and dignity, limited access, and various other related issues. They were denied basic facilities such as access to toilets and drinking water.

One female worker noted,

“Maybe because we are in this job, people usually don't allow us inside the house to use the toilets; only a few are there who are generous to us like that - Case/R13.

Another worker noted,

“I once went to the toilet in a nearby apartment where there was one available on the ground floor for use, but when I went and got back the next day, they had locked it. So, I can't use it anymore. The hotels around us also don't allow us inside to use their restrooms. We are thankful some mandaps allow us” –case/R8.

Workers highlighted the lack of restrooms or spaces for the women workers to use during menstruation or even when changing their dresses. When asked regarding this, the responses were

“In the office alone, we change dress, and we have to use whatever or wherever toilets are available for us to use, and when it comes to rest spaces, there is nothing there. We sit before a house or on the road. We don’t have any rest spaces for us. Our main concern is changing dresses”. -case/R1.

This shows the neglect, social exclusion, stigma, and gendered discrimination that the workers face even for wanting to use the very necessities.

Public behaviour

The workers face complex public behaviour marked by both cooperation and conflict. Several workers described positive relationships with the residents in the streets allotted to them due to their routine work, hence building good rapport and mutual familiarity.

A male worker shared that,

“I know all the people in this street, and I know their behaviour well, so it's easy for me to get my job done”. – case/ R12.

Others noted that when they are unavailable, the residents inquire about their well-being and the reason for taking a day off, showing concern. However, the researcher felt and noted that while some are genuinely concerned, few are deliberate in inquiring why they have not come to clean the trash in their houses. There are also frequent complaints and verbal hostility faced by the workers at times, noted a worker, sharing.

“People raise complaints when the big bins on the road are not cleaned. They don’t understand that after we clean, there might be more trash thrown by somebody else. We are doing as much as we can”. – case/ R2.

These accounts reflect the realities of public expectations and sanitation work. They show the public’s inability to understand the nature, constraints, and challenges the workers face within working hours, doing their best despite the struggles. This also showcases the emotional resilience of the workers in response to facing the complaints and hostility from the public, encapsulating a resigned endurance.

Health and well-being

When it comes to health, apart from the issues mentioned on the use of Personal protective equipment, there are mixed responses from people who are experienced and people who have been working for over 5 years. They all mentioned receiving ESI Employees’ State Insurance (ESI) benefits and occasional access to medical camps organized by the employer. Apart from that, none have health insurance, being notably unaware of the insurance schemes provided by the government.

A female worker noted,

“I get a pension, and there's an ESI benefit as well. Apart from that, my company organizes medical camps to take care of us between months. So, we are doing well. Apart from that, if anything, I go to the hospital, we don’t have other benefits, nor do I have insurance, so with whatever I have, I make do” –case / R15 (over 13 plus years of experience).

Another noted that blood tests were conducted during a medical camp, but no results were shared, nor were they provided with medications, suggesting a lack of transparency and follow-up on the health services. Those workers with a few years of experience mentioned they were provided medications and taken care of during COVID-19 and during the medical camps, reflecting mixed responses. Besides these, women workers mentioned chronic physical strains like stomach aches, hand aches, leg aches, and fatigue due to carrying around the trash bins. These are often endured by the sanitation workers silently and normalized, as there are no avenues for work adjustments or medical relief.

Living conditions

The respondents highlighted stark differences between the living and working conditions across the zones. As mentioned in Table 2, Several workers are living in peripheral areas of the city where it is less regulated and have high-density apartments with clusters of people living together with communal toilets and baths, emphasizing the unhygienic surroundings and a fear of house displacement.

“We can be displaced anytime . So, we don’t have toilets, but a common toilet that we share.” –case /R13 shared a female worker.

In contrast, the other respondents mentioned feeling safe, having rented or owned houses with all facilities, with attached or shared toilets. Notably, a few respondents also mentioned that sanitation workers working in their areas from another private firm do not perform their duty effectively, resulting in poor waste management, which cannot be questioned as well due to a lack of proper urban governance, showcasing different labour standards and accountability between the corporation and between the firms. It also points out the systemic neglect that reflects the irony of workers cleaning and keeping the areas clean while living in an unhygienic and bad environment, depicting exclusion from urban planning.

Social and Family support

The respondents mentioned family as their primary source of support, hope, and motivation for continuing the job. Workers valued freedom and a stress-free atmosphere, despite no growth in this kind of job. With enough time after work hours, sanitation workers mentioned that rest and being with their family made them happy and satisfied with the job.

“My family doesn’t say much, and they support me. I don’t care about what other people say about me”. – case/R12 shared a male worker”.

Another noted,

“My son said if I'm not feeling well, I need not work, so I'm doing my best with my job”.
– case/ R13.

Workers also shared that they feel pride, happiness, and satisfaction with the work. One male worker claimed,

“I believe I'm doing something good, I'm very proud of the job I'm doing, and I'm very satisfied with it, everything is perfect for me” –case/ R1.

These narratives reflected positivity and great support from peers and family despite systematic neglect. However, workers are unaware of the benefits provided by the government for their children's education and individuals with disability, again indicating legal illiteracy and exclusion from welfare schemes.

Situational analysis:

The situational analysis approach included in the study brings out the persistent and multifaceted vulnerabilities faced by the sanitation workers employed on contract under Urbaser Sumeet in Chennai, Tamil Nadu. These vulnerabilities are consistent with national and international studies on sanitation workers focusing on occupational health, hygiene, and clean sanitation and safety. Key issues include issues with the Personal Protective Equipment (PPE) provided, health issues, access to sanitation, resources, and lack of awareness of the welfare schemes. Despite the proliferation of policy interventions since 2020, many of these issues remain unresolved in 2025. Hence, the findings call for inclusive frameworks, as the study not only emphasizes the occupational and infrastructural challenges but also reveals exclusions shaped by caste, class, and gender.

Employment and Working Conditions

The sanitation workers begin their work from 6 am; often waking up around 4.30- 5 am to commute for attendance before reaching the allotted workplace, with shifts lasting 8 hours thereafter. It is obvious from Table 2 that commuting is taxing and requires spending money on travel expenses. Street sweepers may have to work longer hours than the garbage-segregating vehicle workers, and overtime is required in case of any VIP or visitation of political parties, official visits, or emergencies, or in the case of complaints. In such scenarios, the workers remain uncertain about the overtime pay, as there is no formal mechanism for recording these details. There are no official contracts, hence no official leave policy for sickness, menstruation, or emergencies. The workers being apprehensive of the higher officials shows a hierarchical system in the sanitation sector that results in no clarity of tenure, renewal terms, or grievance redressal measures. Informal contact with the supervisor allows ad hoc facilities when taking a day off or during the rainy season, but that doesn't conform to full salary, leading to penalties or salary cuts. A positive aspect of the responses from the study is that there appears to be no wage disparity based on gender. Garbage vehicle drivers receive a specific wage for their work, while street sweepers and cleaners are compensated differently. However, it remains uncertain whether women are being recruited for driving positions, pointing to possible gendered barriers in role allocation.

Occupational Health and Personal Protective Equipment Challenges

The UMC Urban Management Centre's Personal Protective Equipment (PPE) handbook discovered discomfort as one of the main reasons for sanitation workers not utilising the PPE equipment provided, yet no action has been taken on their recommendations for design improvements and training. Studies by the Wai Municipal Council and the World Health Organization (WHO) survey report suggested that worker-led trials and worker-centered designs of the PPE equipment are better with good adoption and fewer issues. Similarly, the Tamil Nadu Urban Sanitation Support Programme (TNUSSP) also recommended reforms, but none of these have been implemented here in Chennai. It can be seen from Table 2 that, in practice, with their low salary, the sanitation workers often purchased their shoes, masks, gloves, or brooms, and other essentials on their own. These inadequacies compound strains in

their duty and reflect a systemic disregard consistent with the ILO (2018) and WHO (2020) on informal work deficits and poor PPE adoption.

Health Access and Awareness

Sanitation Workers were unaware of the social security schemes, aside from Provident Fund (PF), Employees' State Insurance (ESI), and the accidental claim insurance scheme, which they knew through their employment. Only a few could explain these schemes properly, like how it's beneficial to them, while the others are unaware of the benefits they were entitled to, showing a knowledge gap. Medical camps were conducted, but the workers reported a lack of transparency in the screenings, leading to ineffective measures and a lack of awareness regarding health access. This knowledge gap on the part of sanitation workers accentuates the need for health literacy and benefit orientation initiatives. The absence of mental health support is also concerning, with male workers showing low self-esteem and female workers being overburdened with housework, caring for children, and doing the sanitation duty, along with workers feeling invisible, disrespected, experiencing public hostility, and institutional neglect.

"If you don't have even 10 rupees in hand, nobody respects you, even if they are your relatives," Case/ R4 shared by one of the respondents.

This reflects how dignity and respect are honoured through emotional and relational resilience rather than society's acknowledgment, reflecting internalization of economic marginalization and a need for urgent psychological support systems.

Living Conditions, Spatial, and Policy Gaps.

It is apparent from Table 2 that the living conditions of the workers spoke about the spatial inequality, intra-worker disparities, infrastructural neglect, and uneven accountability and governance. This needs to be addressed, and the urban planners should work on the surroundings with high-density apartments and poor waste management. When discussing policies, the flagship programs and initiatives aiming to transform society by implementing changes also exhibit potential persistent gaps that can be identified through the situational approach and social determinants models incorporated in the study, which stems from the structural and contextual vulnerabilities, further recognizing the enablers and the barriers that exist. In the case of Swachh Bharat Abhiyan (SBA), the workers' efforts often go unnoticed, and the campaign often perpetuates the stigma of sanitation work as something to be ashamed of. Although improvements can be seen in schools and public spaces through the WASH program, sanitation workers, especially women, don't have access to sanitation facilities. There is also no access to sanitary pads or spaces to use during menstruation. This can lead to heightened risks due to a lack of supportive measures and reinforce gendered exclusion. The United Nations Human Rights Council (2007), along with Indian judicial guidelines, highlights the dignity and safety of sanitation workers, including access to clean facilities, health insurance, etc. This reflects contradictions of SDG 11 (Sustainable Cities and Communities) and SDG 3 (Good Health and Well Being) for inclusive and sustainable cities. Furthermore, the World Health Organization and national policies also emphasize basic hygiene facilities for the workers, yet these mandates remain unfulfilled, showcasing gaps between policy and practice.

Work Satisfaction, Social Protection and Public Behaviour

Despite the various challenges associated with the job, 13 out of 15 respondents expressed satisfaction with their roles, citing favourable working hours and salary. Some of the respondents noted that their earnings are in line with their expectations and reflect the education they have received. Additionally, the behaviour of commuters or people, in general, raises concerns about common sense, conscience, and respect for safety, hygiene, and fellow individuals in the community and workplace. Raising complaints and blaming them for issues like overflowing bins, once again raises attention for civic education on waste management and the dignity of the workers, positing a need for policy frameworks that recognize and appreciate their efforts and contributions. All the sanitation workers interviewed have children; some of whom are currently studying between the 5th and 9th standard, and a few are awaiting school enrollment, including children with disabilities (PWDs). However, the workers are largely unaware of the various state and central government schemes available for their children's education and for individuals with disabilities. The Rights Project, initiated by the government of India, is a data collection drive and outreach initiative addressing Persons with disabilities by visiting households, which is relevant here. The sanitation workers also remain uninformed about its existence. This lack of awareness results in missed opportunities to obtain disability certificates and access pensions or other entitlements. These findings underscore the urgent need for welfare- and benefit-oriented outreach programs tailored specifically for sanitation workers and their families. Aligning this with SDGs shows the huge gap that undermines the call of SDG 16 (Peace, Justice, and Strong Institutions) for responsive and inclusive governance.

Recommendations put forth by Sanitation Workers:

When asked if they would like to say something to the public and government, sanitation workers offered the most practical suggestions from their experiences.

- Waste segregation by the citizens: The majority requested that the citizens sort the trash before discarding it.
 - a. A male worker shared, "If the people can sort out their trash in their houses and discard it, it would be easy for us to do the job,"- case/ R10.
 - b. While a female worker noted, "I think the city can be good if all cooperate well on the sorting and discarding – case R6,
- Shared civic responsibility: Sanitation is the shared civic responsibility, and cooperation from the public reduces labour intensity.
- Workplace facilities: The workers also requested designated dress-changing areas, mobile restrooms, drinking water facilities, and a rest area. These facilities not only protect their hygiene but also from possible harassment and discomfort, highlighting the absence of dignified workplace facilities, gender sensitive and inclusive urban planning development.
- Policy alignment: These concerns resonate with the Garima and NAMASTE scheme for inclusive facilities, but the gap can be clearly seen and noted through the workers' expressions.

- Manual scavenging: The researcher then posed questions regarding unions or NGOs) non-governmental organizations associated with aiding them, and regarding manual scavenging. The respondents shared that there's no manual scavenging work now and that the corporations take care of it. Even though this shows what the policies and officials are suggesting, under the guise of what's happening is uncertain.
- Union and collective representation: When it comes to the union, only one female responded, sharing. "We have a big community of people, when there are certain issues, they all strive to get a resolution for the problems, like salary or some other issues that need addressing"-case/R13. Reflecting the low visibility of such representation or the lack of formal representation and reliance on informal community networks, underscoring the need for collective bargaining structures as advocated by the Self-Employed Women's Association (SEWA).

Suggestions

(1) Policy Makers

- Establish a policy for contract workers, particularly in informal settings and institutions where specific provisions are lacking. This aligns with SDG 8 (Decent work and economic growth and the ILO (2018) call for formalization.
- Develop Special provisions for emergencies and disasters, including clear guidelines on emergency protocol and preparedness consistent with WHO(2020) recommendations.
- Ensure Compliance and transparency in audits of contract workers, prioritizing safety, security, and health. Equip mechanical bin lifters to reduce physical strain for women workers.
- Address Prolonged occupational health problems, the risk of contracting diseases, and the lack of personal protective equipment (PPE) by conducting an in-depth analysis to pinpoint the root causes.
- Building or providing space for resting, changing clothes, mobile toilets, and drinking water facilities consistent with SDG 6 (Clean Water and Sanitation) and SDG 11 (Sustainable Cities and Communities).
- Facilitate worker participation in the design of PPEs as highlighted by WHO (2020), ensuring suitability across different sanitation workers' roles.
- Conduct Medical screenings often, and provide subsidized treatments in both private and government clinics, recognizing sanitation workers as a high-risk group under SDG 3 (Health and wellbeing)
- Broaden the scope of policy flagships like - Swachh Bharat Abhiyan (SBA), WASH, and the NAMASTE scheme, ensuring they address stigma, advocacy, acknowledgement, and grievance redressal, humanity, and dignity.

- Promote workers' participation at the grassroots level in policy making and implementation, aligning with the rights-based approach and SDG 16 (Peace, Justice, and Strong Institutions).

(2) Internal and External Funding Agencies

- Address salary and grievance resolution through digital innovations using advanced technologies for better tracking and disposal of solid waste, and management.
- Invest in waste-to-resource initiatives such as vermicomposting and community-led recycling, aligning with SDG 12 - (Responsible Consumption and Production). For example, flower waste and other recyclable materials can be used to create incense and burners. This initiative has become a successful entrepreneurial venture for Phool, a social enterprise in Kanpur (Phool, 2023).
- Appointment of social workers to bring in structural changes in the society to advocate for the social protection measures, discrimination, exploitation, and legal rights literacy, safety, security, and mental health at ward and zone levels Encourage building unions or communities, SHGs, or collaborating with counsellors and NGOs, for the empowerment of these workers, reflecting with SEWA's (2017) findings on collective resilience.

(3) NGOs and Civil Society Organizations

- Provide Mental health care and support for the betterment of the workers.
- Conduct further research on chronic health issues, including respiratory and musculoskeletal disorders beyond Covid -19, consistent with the International Labour Organization (2018) and the Central Control Pollution Board reports.
- Address caste-based disparities or challenges faced by individuals from other communities affected by caste discrimination to understand patterns of exclusion.
- Investigate migrant workers' (those working as sanitation workers) vulnerabilities, such as displacement and policy which affects their livelihood and the safety of their families.

(4) Beneficiaries and General Public

- Recognizing sanitation as a shared responsibility, not solely the job of sanitation workers, to maintain cleanliness, hygiene, and sanitation.
- Encourage citizens, NGOs, social workers, and other stakeholders to contribute to keeping our surroundings and the city clean. This effort should include cooperation for effective implementation.

The Study Limitations and Scope for Future Research

- Data collection was limited to sanitation workers from the A shift across five zones in Chennai, restricting representation from other shifts and areas, which may have different conditions and challenges.

- The researcher did not seek permission from engineers or higher authorities; instead, data was collected from participants who were willing to engage voluntarily, which may have constrained access to bigger operational data.
- Interviews were conducted during break time or at the end of the shifts, which may have restricted openness and more in-depth responses due to fatigue or being pressed for time.
- Time constraints limited probing into sensitive topics such as menstrual health. Some respondents indicated they had more to share with the public or government, but chose not to express it during the interview.
- Due to extensive existing literature on musculoskeletal disorders, respiratory issues, and comorbidities, this study focused more on mental health and physical strain, which left other health dimensions uncovered.
- The initial assumption that responses would be similar (except for socio-demographic details) was challenged—each participant shared unique insights, revealing layers of lived experience for certain questions that may remain unobserved in broader surveys, though there was saturation in many responses.
- All respondents in the study belonged to the SC community, which reflects the caste-based entrenched stratification of sanitation labour in Chennai. Other communities and intersectionality-based studies are to be included to understand the different challenges faced.

Scope for Future Research

- Citywide studies disaggregated by task, gender, caste, contract type, and other intersectionalities are essential for promoting equity and good governance.
- Focused research on mental health, burnout, stigma-related stress, and intergenerational psychosocial impacts on sanitation workers' families can inform targeted interventions.
- Studies on public behavior, misuse of sanitation infrastructure, and its consequences on urban development can support behavior change and better maintenance.
- Exploring how dignity is reconciled in everyday life can help recognize the contributions of sanitation workers and foster societal respect.

Conclusion

This study presents a comprehensive, triangulated account of the challenges faced by sanitation workers in Chennai, revealing how informal employment arrangements, gendered burdens, entrenched stigma, and intense physical demands shape their everyday realities. Despite these systemic constraints, workers express satisfaction, pride, and a remarkable degree of adaptability in their roles. The situational analysis approach employed in this research further illuminates the struggles of contractual labor and the consequences of exclusionary policy implementation, including gaps within flagship initiatives such as SBA, among others. The findings underscore the urgent need to restructure urban sanitation policies to promote inclusivity, dignity, and justice for workers. Effective measures must address both structural

inequities and the symbolic dimensions of sanitation labour, ensuring that workers are not merely seen as service providers but as respected stakeholders in urban governance. Strengthening the sanitation sector requires a combination of structural reforms and inclusive planning. This includes formalising employment, improving occupational safety, expanding access to health and sanitation infrastructure, and integrating gender-sensitive approaches into municipal systems. International examples such as South Korea's community-driven waste management initiatives show how civic participation can reshape sanitation governance. Encouraging similar forms of participatory planning and shared responsibility within Indian cities can help build social cohesion and create cleaner, more inclusive urban environments. This could also signify the importance and labour done by the sanitation workers. Communities can be made aware through advocacy to shape their behaviour for the betterment of themselves and their surroundings. Such approaches not only acknowledge the essential labour of sanitation workers but also align with the Sustainable Development Goals, particularly SDGs 3, 5, 6, 8, 10, 11, 16, and 17. Moreover, this study also argues that sanitation workers must be recognised not as invisible labourers but as central actors in maintaining urban health and public life. Their insights, experiences, and expertise should inform the design and implementation of sanitation policies. By combining structural reforms with cultural recognition, stakeholders can move toward a sanitation system grounded in equity, dignity, and collective responsibility.

Conflict of interest: None

Authors contributions

Conceptualization: Priya, Udhayakumar, and Sigamani Panneer; methodology: Priya; formal analysis: Priya and Udhayakumar; writing- original draft preparation: Priya, Udhayakumar, Sigamani Panneer; Supervision: Sigamani Panneer. All authors have read and agreed to the published version of the manuscript.

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