Lived experience of Occupational Health and Safety among Street Sweepers in Dhaka city: A Qualitative study

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Declaration

I, Mahira Hassan, hereby declare that this thesis entitled "Lived experience of Occupational Health and Safety among Street Sweepers in Dhaka city: A Qualitative study " is an original work submitted in partial fulfilment of the requirements for the degree of Master of Public Health (MPH) at the James P Grant School of Public Health (JPGSPH), BRAC University, Dhaka, Bangladesh.

I further declare that this work has not been submitted previously, in whole or in part, for any other degree or examination at this or any other university or institution.

All sources used in this thesis have been duly acknowledged and cited. Any assistance received has been mentioned in the acknowledgements section. I have also added a separate declaration on GenAI use at the end of this work.

Date: 02 June,2026

Approval

The thesis titled “Lived experience of Occupational Health and Safety among Street Sweepers in Dhaka city: A Qualitative study” submitted by Mahira Hassan (25167005) of 2026 has been accepted as satisfactory in partial fulfilment of the requirements for the degree of Master of Public Health.

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Ethics Statement

Ethical approval from the Institutional Review Board of BRAC University was received. Before starting the interviews, participants were informed about the study objectives, potential risks, benefits, confidentiality, and voluntary participation. The identities of the participants were kept anonymous and they were informed about withdrawal from the study freely at any time without giving any reason.

Abstract

Background: Street sweepers play a critical role in urban waste management, but are still a marginalized occupational group in low and middle-income countries. Dhaka, being one of the most densely populated cities, generates large volumes of waste every day, putting this group of people in the front line of urban sanitation under hazardous conditions. The street sweepers are continuously exposed to various physical, chemical, biological, and ergonomic hazards due to their working conditions and poor institutional support. While existing studies have documented health hazards and disease prevalence, limited qualitative evidence exists on how street sweeper in Dhaka perceive their health risks, seek care or manage with the ongoing demand of the occupation.

Objectives: To explore the lived experiences of occupational health and safety, perceived health risk, occupation-related health problems, health-seeking behaviour, and coping mechanisms among the street sweepers in Dhaka city.

Methods: A qualitative study was conducted with six wards of Dhaka North City Corporation (DNCC) in Badda, Mohakhali, Rampura, and Mirpur. 22 In-depth interviews with street sweepers, 7 key informant interviews with their direct supervisors, and 4 non-participant observations were held using snowball sampling, guided by the principle of data saturation. Thematic analysis approach was used for conducting the data analysis using deductive and inductive coding.

Results: Four themes emerged from the data analysis:1) Perceived health risks, 2) Health problems, 3) Health-seeking behaviour, 4) Coping and adaptation mechanisms. The perceived health risks were mixed among the street sweepers, where some could identify their workplace hazards while others underestimated the risks or perceived illness as a matter of fate. Musculoskeletal pain was the most frequently reported health concern, followed by respiratory illness, chronic disease, skin diseases, and gastrointestinal problems. The street sweepers described mental exhaustion, financial tension, restlessness, and loss of peace of mind, showing up through irritability, anger, crying, and family conflict rather than being separately named as a mental health issue. Health care seeking was consistently delayed or avoided, primarily due to low income, time constraints, and cost of care, with pharmacies serving as the first and often only point of care, followed by public and private facilities if felt necessary. Street sweepers coped through normalising hardship, self-medication, peer support, and religious faith.

Conclusions: Street sweepers in Dhaka face increasing occupational health hazards and safety issues. Despite existing legal protection, there are unenforced labour laws, limited access to healthcare, and organizational support being absent in practice. Ensuring permanent employment benefits, provision of workplace facilities, enforcement of existing labour laws, and focused occupational health interventions are in urgent need to protect the safety and health of the overlooked occupational group, street sweepers.

Keywords: Street Sweepers, Occupational Safety and Health, health-seeking behaviour, coping mechanisms, Qualitative study

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List of Acronyms

Acronyms	Full Form
OHS	Occupational Health and Safety
PPE	Personal Protective Equipment
BLA	Bangladesh Labor Act
BLR	Bangladesh Labour Rules
SDG	Sustainable Development Goal
LMICs	Low and Middle income countries
JICA	Japan International Cooperation Agency
PEFR	Peak Expiratory Flow Rate
ILO	International Labor Organization
IDI	In-depth Interview
KII	Key informant Interview
CI	Conservancy Inspector
DNCC	Dhaka North City Corporation
DSCC	Dhaka South City Corporation

Chapter 1: Introduction

1.1 Background and Rationale

Background

Dhaka, one of the megacities of the world, is a densely populated capital of Bangladesh, and relies heavily on street cleaners. The population in Dhaka is increasing rapidly and posing a significant challenge for waste management. Daily, around 48,000 tons of solid waste are generated all over the country, and Dhaka alone contributes to approximately 8000 tons (Miller & Sohapy, 2025).

The street sweepers are an essential part of the urban waste management workforce who play a vital role in managing the waste, despite challenging working conditions and limited resources (Desye et al., 2025). Hired by the local governments, street sweepers are responsible for maintaining cleanliness across public spaces, for instance, roads, sidewalks, parks, markets, open areas, and public places using long manual brooms and trolley vans, thereby directly contributing to habitable urban environments (Alamgir,2020; Gebremedhn & Raman, 2020). This entire procedure involves ongoing physical activities like sweeping manually while standing for extended periods, loading and unloading waste by bending down frequently and often for a long time to gather the waste, pushing and pulling the trolley vans (which often do not work properly), and transferring waste to the dumping point or secondary transfer stations (Gebremedhn & Raman, 2020). Generally, these groups of labourers belong to low sociodemographic backgrounds and often live in poor housing conditions, paying little to no attention to their own health (Desye et al., 2025).

During their daily work as street sweepers, they are exposed to various hazards, which include "physical, chemical, biological and psychological hazards"(Alamgir, 2020; Maneen et al., 2025; Sultana et al., 2022). Long-term exposure to dust takes a heavy toll on their lung health as it contains a mixture of "bioaerosols", high concentrations of particulate matter, "fungi, bacteria, and endotoxins" which can trigger respiratory infections and other pulmonary conditions (Priyanka & Kamble, 2017). When waste is handled, microbes react with it to create bioaerosols, which could result in poisonous, allergic, or contagious consequences (Priyanka & Kamble, 2017). Physical risks include skin problems, heat stress, breathing issues, hearing loss, and many more (Mishra et al.,2020). The street sweepers are susceptible to occupational diseases, accidents, and injuries, for instance, dermatological disorders, digestive disorders, respiratory diseases, and musculoskeletal issues, etc. (Hossain et al., 2025; Kabir, 2023; Sharior et al., 2023). Additionally, toxic exposure to pollutants like "carbon monoxide and particulate matter" can cause dizziness and respiratory illness (Mishra et al.,2020). Psychosocial risks involve isolation and fatigue, while ergonomic risks can happen from unsafe tools, poor posture, and inadequate organizational support (Mishra et al.,2020). Furthermore, their mental and physical well-being is impacted due to limited autonomy, high job demand, job insecurity, social stigma, and lack of support, etc (International Labour Organization, 2025; Huq & Mahbuba,2015). In developing countries like Bangladesh, waste is collected with limited protective equipment, mostly by hand, leaving the street sweepers vulnerable to various health hazards. Additionally, many street sweepers find formal healthcare unaffordable, not only due to their low income but also due to limited awareness (Kabir, 2023).

Despite the presence of Occupational Safety and Health (OSH) standards and legal policies, there is weak enforcement and implementation. These policies cover a range of protections including compensation for injuries, accidents and death, regulated working hours, workplace facilities, PPE provision, medical services, first aid, and training on hazard awareness (Bangladesh Labour Act, 2006; Bangladesh-Labour-Rules, 2015; Department of Inspection for Factories and Establishment, n.d.; Ministry of Labour and Employment,2021; Department of Inspections for Factories and Establishments,2021; Bangladesh Institute of Labor studies, 2015).

Previous studies conducted in Bangladesh have focused on the adverse health conditions and other occupational risks among different occupational and low socio-economic populations. However, studies focusing on street sweepers, particularly exploring deeply about their occupation-related health problems, how they seek healthcare, and cope with certain health conditions, have not been studied. Hence, this study aims to explore the lived experiences of street sweepers to explore their perceived health risk and health problems they face due to their occupation, health-seeking behaviour, and coping mechanisms who are working in Dhaka city.

Rationale

Street sweepers remain a comparatively overlooked occupational group, despite global and Bangladeshi studies consistently showing that street sweeping is a hazardous occupation. The workplace safety and health of the street sweepers remained largely neglected in both research and policy. Most existing studies are quantitatively conducted, which documented disease prevalence, risk determinants, exposure levels, and PPE use. Only a few qualitative studies have focused specifically on street sweepers in Dhaka, and that too, examining a particular population among them. One research on street sweepers in Dhaka, Bangladesh has focused on the Telugu community living in selected colonies, exploring basic sweeping practices and hazard awareness (Kabir et al., 2015). Another study has focused on Harijan women, exploring the relationship between empowerment and vulnerability (Chandra & Parasar, 2026). A case study conducted in Dhaka explored street sweepers' experiences of employment rights (Huq & Mahbuba, 2015). A quantitative study explored the financial conditions and challenges of the street sweeper limited to Jashore and Benapole Pouroshobha (Kabir,2023). It is difficult to maintain urban cleanliness and wellbeing if they remain unprotected and lack targeted support. There is a lack of qualitative studies that capture the street sweeper's daily lived experience, working conditions, OSH issues, coping, and health-seeking behaviors. Therefore, evidence-based actionable policies are needed to improve the working conditions, livelihood, and dignity of the street sweepers.

1.2 Problem Statement

Street sweepers play a vital role in keeping urban environments clean and livable, yet their occupational health and safety often remain overlooked. There is also a lack of evidence from studies that use in-depth qualitative methods and provide a narrative on street sweepers' perceptions of health risks, occupational health issues, health care seeking behaviour, and responses to ongoing occupational hazards, in cities of Bangladesh, particularly in Dhaka. This limits the attempt to implement the targeted occupational health interventions and policies. The previous studies have largely focused on hazards and the prevalence of diseases, but neglected how they perceive occupational risks, their health care-seeking behaviour, and coping mechanisms. Hence, it is important to explore the lived experiences of street sweepers working in Dhaka city to build evidence for improving their health, safety, and working conditions.

1.3 Study Objectives

1.4.1 General Objective

To explore the lived experiences regarding occupational health and safety, perceived health risk, occupation-related health problems, health-seeking behaviour, and coping mechanisms among the street sweepers in Dhaka city.

1.4.2 Specific Objectives

The specific objectives of this study are:

1. To explore the perceived health risks by the street sweepers in their daily work.
2. To explore the common health problems experienced by street sweepers that are associated with the working environment and activities in their occupation.
3. To understand the health-seeking behavior among street sweepers.
4. To understand street sweeper's coping and adaptation mechanisms with ongoing occupational risk and work-related health problems in their everyday lives.

Chapter 2: Literature Review

Street sweepers hold an institutionally unstable position in the urban waste management and sanitation system. Evidence from Dhaka, Bangladesh, suggests that street cleaners' employment contracts are of two types: daily-wage (master roll) basis and permanent employment, with daily wage workers paid only for days worked and permanent workers receiving limited formal benefits apart from a monthly salary (Huq & Mahbuba, 2015). The weekend is only available to permanent street cleaners, but contract (master roll) street cleaners are not eligible for this privilege (Huq & Mahbuba, 2015). Although permanent street cleaners, according to their contract, are allowed a week of absence from work, this solely depends on the Dhaka City Corporation's (DCC) authority's decision (Huq & Mahbuba, 2015). Employment status and gender shape deep inequalities, as permanent workers receive fixed wages and pensions, while master-role cleaners, especially women, face lower pay, reduced overtime rates, and no benefits (Huq & Mahbuba, 2015). There is gender discrimination between street sweepers, regarding wage distribution and the experience of harassment (Huq & Mahbuba,2015). Desye et al. (2025) in their study noted that due to their working conditions, the street sweepers are generally in contact with hazards and risks, which include "airborne particle" smokes from traffic, environmental exposure such as dust, noise, "vibrations", "radiations" fire hazard, and emotional distress induced by their occupation.

More than 50% worldwide labourers are working in low and middle-income countries (LMICs), and the International Labour Organization (ILO) reports that 125,000,000 employees all over the world face occupational injuries annually (Mishra et al., 2020). Approximately 2,200,00 of the labourers have become unemployed due to workplace injuries and accidents, and 160,000,00 incidences of diseases have been reported (Mishra et al.,2020). As there are implementation gaps of occupational safety and health protocols in LMICs, pushing the street sweepers to further vulnerability (Gebremedhn & Raman, 2020).

Although workers are officially monitored by their supervisors, field-level supervision is weak, and often occurs only during salary distribution, with reported irregularities in payment records (Huq & Mahbuba, 2015). According to a systematic review, employment insecurity is particularly common among those holding temporary employment and is a major source of stress, which is associated with poor physical and mental health outcomes (Kim & Knesebeck, 2015). Furthermore, employment instability and temporary or contract-based work agreements are simultaneously linked to poor overall well-being, low job satisfaction, and high rates of musculoskeletal problems (Thomson & Hünefeld, 2021). Sustainable Development Goal (SDG) 8.8 states decent employment, protection for workers' rights, and promotes safe working conditions with no gender discrimination, mainly for people in hazardous jobs (Maneen et al., 2025).

Despite the existence of formal employment and termination guidelines, street cleaners experience ongoing job insecurity, which discourages them from voicing concerns and reinforces compliance with authorities (Huq & Mahbuba, 2015). Under the Bangladesh Labour Act, workers should be protected from workplace injuries and receive compensation (BLA, 2006). Section 99 of the Bangladesh Labour Rules (2015) specifies an 8-hour workday, but it can be extended to 10 hours if the worker agrees, is given two hours' notice, and is paid overtime (BLR,2015). According to the policy, employers are required to identify all occupational safety and health hazards and train all employees about them as well as the possible sources of accidents (Department of Inspection for Factories & Establishments [DIFE], n.d; BLR, 2015). According to (Section 78A, BLA Amendment 2013), an employer may not assign employees to work without first giving them PPE and making sure they use it appropriately (Ministry of Labour and Employment, 2021). Under Section 53 of BLA, (2006) the employers should ensure to prevent workers' environmental exposures (BLR, 2015; Ministry of Labour and Employment, 2021). Under sections 58-60, the workers are entitled to get basic workplace facilities like safe drinking water and separate and clean toilet and sanitation facilities (BLR, 2015; Ministry of Labour and Employment, 2021). Under clause 4.d.7, employers are bound to give safety training, PPE and make sure that the workers use these (Ministry of Labour and Employment, 2021). Again, the workers themselves need to follow OSH guidelines to protect themselves and their colleagues according to Clauses 4.e.1-4.e.2 (Ministry of Labour and Employment, 2021). Under the BLA (2006), the employers must provide training on risk awareness according to Section 78A, give compensation for workplace injuries as mentioned under Section 150, and bear expenses for medical examinations if there is any workplace accidents that occur under their supervision, as mentioned in Section 160(1) of the BLA Amendment 2013 and Section 142 of the BLR 2015 (Ministry of Labour and Employment, 2021). The BLA (2006) also guarantees paid maternity benefits for eligible women workers for eight weeks before and after childbirth, provided she has completed 6 months of service according to Section 46(1) (Ministry of Labour and Employment, 2021). Under Section 98 of the BLR (2015), employers are strictly required to fund and maintain group insurance for all workers to cover death or permanent disability, ensuring that benefits are paid to nominees without any wage deductions or influence to other legal entitlements (BLR,2015). These policies are weakly enforced and only exist on paper. Additionally, workers' rights include protection from discrimination and harassment, fair wages, regulated working hours, access to safety measures, and welfare facilities (Huq & Mahbuba, 2015).

In developed nations, occupational hazards among street sweepers have been reduced through organised occupational health systems, the provision of protective equipment, enforcing safer working conditions, and ensuring better access to healthcare services (Desye et al., 2025). But in low and middle-income nations, street cleaners continue to work under unsafe and hazardous conditions (Priyanka & Kamble, 2017). These health hazards are intensified by inadequate sociodemographic conditions and the social stigma linked to the profession (Mishra et al., 2020). Moreover, due to a lack of basic facilities at the workplace, it is further difficult for the women street sweepers to maintain their menstrual hygiene (Alam et al., 2022).

Additionally, street sweepers frequently do not utilize PPE, to reduce the risk of exposure to workplace dangers (Oe & Ua, 2020). The majority of staff have never been trained on occupational health and safety issues, including how to properly use and discard PPE, crucial for preventing the increase of viral infections (Alam et al., 2022). Parikh et al. (2019) found that none of the street sweepers in their study used standard PPE. However, 12.3% were using improvised alternatives such as “handkerchiefs and dupattas” to cover themselves, which the researchers categorized as "unconventional” PPE (Parikh et al., 2019). Inadequate accessibility of PPE, financial limitations, and discomfort with the use of PPE force workers to neglect the use of safety measures to fulfill job demands (Sapkota et al., 2020). According to a review report by WaterAid examining the PPE use among sanitation workers in tropical settings, found that poor fit, discomfort in hot and humid conditions, and design flaws were among the main reasons workers struggled to use them consistently (Water Aid, 2020).

Street sweepers all over the world have to encounter various occupational health problems, such as musculoskeletal disorders, respiratory and skin disorders, gastrointestinal and eye problems, and allergies, along with injuries, including cuts and wounds (Gebremedhn & Raman, 2020). In Egypt, a study on sweepers reported work-related injuries 94.9% (Gebremedhn & Raman, 2020). A similar association between chronic respiratory diseases and adverse effects on lung function due to continuous exposure to dust has been reported by studies from Pakistan, Bangladesh, and Egypt (Gebremedhn & Raman, 2020). In their study, respiratory symptoms were prevalent among 68.9% of street sweepers in Addis Ababa. Vision problems were widely reported, with a Nigerian study finding that 70.8% of sweepers had suffered from eye infections, while in Kenya, eye irritation and vision loss were among the most frequently noted health concerns among the street sweepers (Gebremedhn & Raman, 2020). In Chandigarh, India, more than half of the street cleaners reported muscle and ligament strains, while studies in Bangladesh found that a large proportion of them faced lower back pain and joint discomfort (61%) and even a higher proportion reported skin problems (81%) (Gebremedhn & Raman, 2020).

Furthermore, a study conducted in Chandrapur, India, examined occupational health problems among street sweepers and found that environmental exposure triggers the respiratory tract, causing irritation and deteriorating lung function, reflected by “Peak Expiratory Flow Rate” (PEFR) among the exposed participants (Priyanka & Kamble, 2017). Additionally, Priyanka and Kamble (2017) also identified high burden of occupational health problems among street sweepers with musculoskeletal issues and allergies among all the participants, respiratory problem among (95%), dermatological disorders (90%), followed by headache and cough and cold (75%), asthma and bronchitis (65%), hearing impairment among half of the participants and the minor health problems like vomiting, fever, gastrointestinal or digestive issues and malaria and typhoid were between (10-25%). A mirror pattern was found in another urban city of India, where Mishra et al. (2020) studied street sweepers of South Mumbai, where skin disease (91%) and musculoskeletal (88%) were the most frequently reported morbidities, mainly among middle-aged male street sweepers. On the other hand, low hemoglobin levels were found typically among the female street sweepers (6.7%), especially those with low socioeconomic status (Mishra et al., 2020). In their study, long working hours were found to be associated with high respiratory issues (11.5%), along with a very small proportion of participants reported having hypertension (6.4%) and heart disease (1.3%).

Multiple studies from South Asia, particularly India, have suggested a high burden of occupational disease among street sweepers, but evidence from Bangladesh remains scarce. According to Kabir (2023), the street sweepers in "Jashore and Benapole Pouroshova" faced various diseases such as skin, respiratory issues, for instance asthma, flu, gastrointestinal illness like diarrhea and jaundice, and occupational injuries due to their nature of work, unsafe working conditions, and manual waste handling. The health problems are further intensified by hidden social and economic discrimination, poor lifestyle, and limited access to healthcare, especially among isolated communities in Bangladesh, such as the Dalit, engaging in low-status jobs such as street sweeping (Kabir et al.,2018). A subsequent study conducted in Dhaka found high rates of communicable diseases due to poor occupational safety measures, along with injuries and wounds that may cause chronic infections over time (Sultana & Tania, 2025).

There is limited research on the health-seeking behaviors and coping strategies among street sweepers. Research among comparable occupational groups provides valuable insights into the health-seeking and coping measures. Asampong et al. (2015) found that the e-waste workers in Ghana opted for various forms of health-seeking behaviour, from self-medication to home-made remedies to pharmacy and then lastly to seeking professional care. The pharmacies were the first go-to place as they are easily accessible and comparatively affordable, while professional help was sought when the health conditions were serious (Asampong et al., 2015). A cross-sectional study among informal waste collection workers in Nellore, India, found that fewer than fifty percent of the injured workers and less than one third of the participants had sought healthcare from any formal healthcare facility (Chinthapatla & Tiwari, 2024). Most managed their health through self-treatment or traditional remedies, and only about one-third of the study participants were aware of the workplace hazards (Chinthapatla & Tiwari, 2024). The main reason for the workers to avoid health care was the expense, and their thinking that the injury was not serious (Chinthapatla & Tiwari, 2024). Subsequently, another study among women rag pickers in Mumbai found that most women avoided seeking healthcare for minor issues unless they felt it was serious, relying instead on home remedies or self-care (Iyer et al., 2023). The majority reported seeking formal healthcare when they delivered babies, reflecting a pattern that professional help was only sought when the situation felt serious and critical (Iyer et al., 2023). Sapkota et al. (2020) found that informal waste collectors in Nepal used avoiding risk, taking basic protection precautions, and self-care as the coping mechanisms. For self-care, they used homemade remedies while seeking professional help when the situation was unbearable. Moreover, the study found PPE use was limited and irregular, with many workers using clothes to cover their faces to avoid risk. In addition, they sought health care based on considering waiting times, accessibility, and affordability, and choosing nearby health care providers for trivial issues and public hospitals for serious issues (Sapkotal et al.,2020).

Now shifting focus to the health-seeking behavior of the street sweepers, they have not been researched earlier based on how they seek treatment, the challenges they face, and whether they seek medical care at all or not. Malik et al. (2022) found that the Afghan scavengers define their sound health based on the ability to continue working. Gender plays an important role in health-seeking decision-making, and many of them overlook the symptoms, considering them insignificant, and tend to resolve on their own based on self-medication (Malik et al., 2020). Similarly, postponing health care is due to some factors, for instance, low perception of individual health status, biased experiences in the health facilities, negative behaviour from the health care support staff, long waiting time, and sense of inferiority (Malik et al.,2020).

Considering the coping mechanisms of the street sweeper, qualitative evidence from the Philippines shows a variety of responses, which include taking loans and lending daily essentials, relying on social support from colleagues, and taking additional side jobs many times, and simply tolerating or bearing the situation (Lagura & Ligan, 2018). A similar pattern is observed among Bangladeshi street sweepers, where they turn towards informal sources of care and rely on strong religious belief as a measure of coping and dealing with health risks (Kabir et al.,2015).

While existing evidence documents occupational safety and hazards regionally and globally, a significant gap remains. In-depth understanding of lived experience among street sweepers in Bangladesh, particularly their risk perception, health problems, health-seeking behaviour, and coping mechanisms, is largely absent.

Conceptual Framework

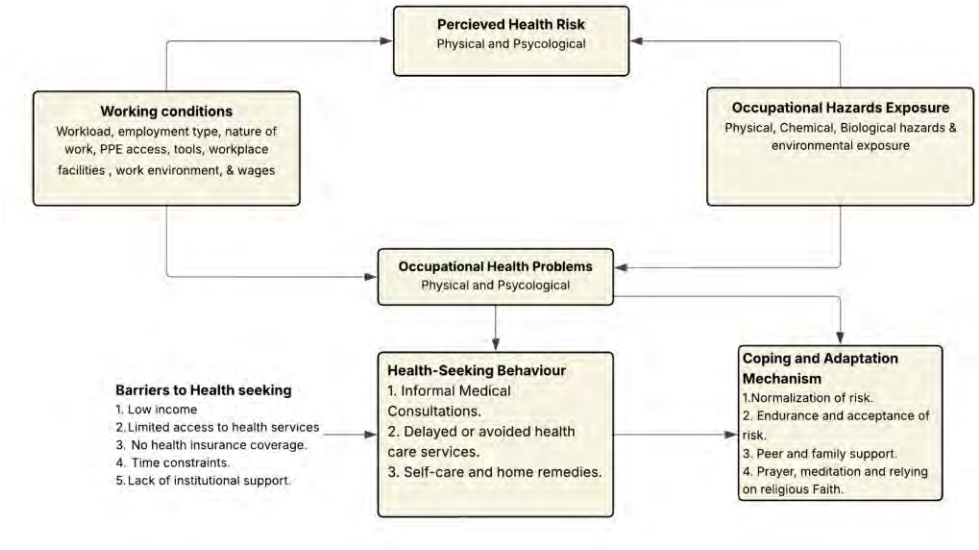

Figure 1: Conceptual Framework

This conceptual framework demonstrates a pathway of how the working conditions and occupational hazards of street sweepers build & affect their experience and actions.
The working conditions of street sweepers play a vital role. These conditions directly expose them to occupational health problems, on the other hand, may raise their perceived health risks. Street sweepers' perceptions of health risks are influenced by unfavorable or challenging work and employment conditions. They gain knowledge of the psychological and physical health issues that they may encounter at work based on their everyday experiences. Similarly, direct exposure to occupational hazards contributes to both perceived health risk and occupational health problems among street sweepers. Moving on, when the street sweepers go through health problems, they might acknowledge it in different ways. Some street sweepers may directly adopt coping mechanisms, such as normalizing it, social support, religious belief, while others might initially have health-seeking behaviours, including self-care, home remedies, informal treatment, or formal healthcare facilities before adopting coping mechanisms.

Nevertheless, health-seeking behavior is influenced by barriers consisting of low income, time constraints, lack of health insurance coverage, and no organizational support, which might result in delayed care or avoidance of formal treatment or dependence on local quacks, traditional healers and informal care, or taking non-prescribed medicine from pharmacies. In the end, in order to keep their jobs and to sustain themselves, street cleaners use a variety of coping and adaptation strategies regardless of their health-seeking behavior.

Chapter 3: Methods

3.1 Study Design

A qualitative explanatory approach was used to understand the lived experience of street sweepers in Dhaka city to understand their working conditions, occupational safety, and health. A qualitative approach was adapted as it captured the perception and understanding of street sweepers in detail. This qualitative study includes in-depth interviews (IDI) with street sweepers, key informant interviews (KII) with direct supervisors of the street sweepers, and non-participant observation for getting a deep understanding of how the street sweepers deal, experience, and express occupational safety and hazards every day.

3.2 Study Area and Setting

The study was conducted within the area of the Dhaka North City Corporation (DNCC). Dhaka city is divided into two city corporations: DNCC and Dhaka South City Corporation (DSCC), each managing waste management within their designated boundaries (Afroz,2025).

DNCC was selected as the study setting as it employs 5000 street sweepers, compared to 5400 under DSCC (Islam,2023). The area of DNCC is (196.22 sq.km), and DSCC's area is (109.24 sq.km). Based on the area and number of street sweepers of the two city corporations, per sweeper's working area in DNCC is (0.039 sq. km) and (0.020 sq.km) in DSCC. Street sweepers under DNCC cover an extensive geographic area, leading to a higher service area assigned per street sweeper compared to the DSCC, suggesting increased physical workload, occupational health risks, and risk of fatigue.

3.3 Study Period

The study was carried out over a period of five months, from January 5 to May 14, 2026. Data collection carried out between March 3 and March 14, 2026.

3.4 Study Population

3.4.1 Study Population

The study included street sweepers for in-depth interviews as the study population. The key informant interviews included their direct supervisors as participants. The street sweepers are the target population as they can share their lived experience about their working conditions, challenges, health, and safety issues. Additionally, the supervisors are included to provide the employers' and authority's perspective.

3.4.2 Inclusion and Exclusion Criteria

Inclusion criteria for Street sweepers:

- Street sweepers who were employed under DNCC in Wards (3,7,10, 20,21 and 22) for at least six months.
- Who were aged 18 and above.
- Those who gave informed consent willingly.
- Who gave consent to record the interviews

Exclusion criteria for street sweepers:

- Severely ill or unable to participate in the interview.
- Did not consent to audio recording.

Inclusion criteria for the supervisor of street sweepers:

- Have been working as a supervisor for at least 6 months.
- Those who give informed consent willingly.
- Who gave consent to record the interviews

Exclusion criteria for the supervisor of street sweepers:

- Those who are severely ill or too occupied with official duties to participate.
- Participants who didn't give permission to record the interviews.

3.5 Sample Size Calculation

Street sweepers

In total, 22 street sweepers were selected as participants for this study, guided by the principle of data saturation, ensuring representation across gender, workload, areas, employment type, and occupational role (drain cleaners, sweepers, loaders/unloaders of waste).

Supervisors/ Inspectors

For conducting KIIs, 7 supervisors were selected as participants who were in charge of street sweepers to capture organizational and managerial perspectives.

3.6 Sampling Technique

This study used snowball sampling to recruit the study participants. To select the wards, the research team visited the DNCC office and received official permission to conduct the study from the DNCC Administrator. With the help of the DNCC waste management department, the team identified the wards with the highest and comparatively lowest workload, which fall under DNCC. Wards 20, 21, and 7 were identified as the highest workload areas and selected accordingly. These wards cover Mohakhali, Badda, and Mirpur 1, respectively. Likewise, Ward 3, 8 & 22 were selected as the lowest workload. This covers Mirpur 10, Mirpur 1, and Rampura. After selecting the wards, supervisors from those selected wards were approached for KIIs. With the help of the supervisors, the research team then selected the first street sweeper for an in-depth interview in each ward. After that, snowball sampling was employed to approach other participants in each ward. A total of 22 IDIs and 7 KIIs were conducted based on the principle of data saturation. Interviews were stopped when no new data or themes emerged from the interviews. Participants were selected keeping gender representation in consideration.

Table 1: Distribution of Study Participants by Ward

Ward	Location	IDIs	KIIs	Total
Ward 20	Mohakhali	4	1	5
Ward 21	Badda	3	2	5
Ward 22	Rampura	4	1	5
Ward 3	Mirpur 10	4	1	5
Ward 7	Mirpur 1	4	1	5
Ward 8	Mirpur 1	3	1	4
Total		**22**	**7**	**29**

3.7 Variables

3.7.1 Dependent Variable(s)

In this study, the dependent variable explores the lived experience of street sweepers in Dhaka city regarding their perception of health risks, occupational health problems, health-seeking behavior, and coping and adaptation mechanisms.

3.7.2 Independent Variables

The following factors were explored as guiding areas during data collection:

- Working conditions (e.g., task demands, wages, working hours, tools and equipment, availability and usability of PPE, area covered, exposure to traffic, environment and weather conditions, facilities at workplace, physical abuse, punishment, threat, exposure to workplace hazards)
- Employment conditions (e.g., permanent and master roll employment, job security)
- Organizational Supervision and support (e.g., training, monitoring, supervision, and support)
- Health seeking (places to seek care, barriers, delayed or avoided care)
- Coping strategies (normalization, adjusting, self-care, social support, religious faith)

3.7.3 Operational Definitions

- **Street sweepers:** Individuals who are employed as sanitation workers by the DNCC, whose main job is to maintain cleanliness in public places. Their responsibilities are sweeping roads and footpaths, collecting waste, loading and unloading waste, and cleaning drains, all of which fall under the official job description of a street sweeper as defined by DNCC.
- **Occupational Hazard:** The risk associated with working in a specific occupation. In this study, the hazards and risks associated with their job as streetsweepers. It can be further divided into 4 types, which are physical, chemical, biological, and ergonomic hazards.
- **Health problems:** The physical and psychological issues experienced by street sweepers due to their occupational exposures and hazards.
- **Perceived Health Risk:** The understanding & belief of probable harm to their health and well-being due to their occupation or work conditions.
- **Injury:** Physical harm faced by street sweepers due to their work activities. For instance: hit by a vehicle, cuts, fracture, slip, fall, burn, etc.
- **Workload:** In this study, workload refers to the number of street sweepers per ward and the area covered by each sweeper. In other words, the average service area per sweeper.
- **Working Conditions:** The working environment of street sweepers, their occupational exposures, workload, access to protective equipment, employment conditions, wages, workplace dynamics, peer & public interactions.
- **Lived Experience:** The daily experience of street sweepers based on their working conditions, occupational hazards, and coping and adaptation mechanisms.
- **Health Seeking Behavior:** The measures that street sweepers take to prevent & cure health problems, which include whether they go to receive health care or not, from where they receive treatment or medicine, delayed or avoided care, what they do when their health deteriorates, etc.
- **Coping and adaptation mechanisms:** Refers to the strategies adopted by street sweepers to manage or reduce the impact of occupational hazards and diseases on their daily lives, where coping is something that is done for a short time and immediately, while adaptation represents long-term adjustments made over time.

- **Occupational Safety and Health Regulations/laws/standards:** Government-sanctioned legal rules and policies designed to protect workers from occupational hazards, ensure safe work conditions, and promote health and safety at work place.
- **Job satisfaction:** Street sweepers' overall feelings towards their job, including both positive and negative aspects of their work environment and experiences.
- **Master Roll employment:** A temporary employment arrangement under DNCC where workers are paid only for days worked. These workers receive no benefits except their salary.
- **Permanent employment:** A formal employment status under DNCC where workers receive a fixed monthly salary, job security, and retirement benefits, etc.

3.8 Data Collection

3.8.1 Data Collection Tools

After completing an extensive literature review, two separate semi-structured guidelines for IDI and KII and one non-participatory observation checklist were developed.

The in-depth interviews (IDI) guide included 32 questions under the following themes with appropriate probing and sub-themes: working conditions, perceived health risk, health problems, health-seeking behaviour, coping mechanisms, job satisfaction, and public behaviour and recommendations from participants. Each in-depth interview was estimated to last for 40-60 minutes.

A semi-structured Key Informant Interview (KII) guideline was developed to conduct KIIs with supervisors. The guidelines included 15 questions in total under similar themes and subthemes. Each KII was approximately expected to last for 30 minutes. Both interview guides were originally developed in English. Later, it was translated into Bangla before finalizing the tool.

The research team also developed a non-participant observation checklist. The checklist was used to capture street sweepers' daily work activities. The observation checklist consisted of work area, activities, work timings, environment, equipment used, workplace facilities, physical, chemical, and biological hazards, health and safety practices, cleanliness and hygiene maintained, injuries, visible health problems, monitoring from authority, and social support. It was ensured that the worker's daily routines remained undisturbed. Field notes were taken to record the researcher's reflections. Each observation was estimated to last for 30 minutes approximately. Data collected from all different sources (IDIs, KIIs, and observations) were triangulated to validate the findings.

3.8.2 Pretesting

Before the data collection, the tools were pretested to ensure the appropriateness of the questions. Pre-testing was conducted on two street sweepers from Ward number 20 for the IDI. One pre-testing of KII was conducted with a conservancy inspector of the same ward. The pretesting was conducted at the street sweeper's assembly point beside the Mohakhali area under DNCC.

Based on the pre-testing, minor revisions were made to the interview guides. The changes mainly involved slight modifications in the wording and way of asking some questions so that the participants have clarity in understanding the questions.

3.8.3 Data Collection Procedure

The interviews were conducted in Bangla, the language of both the researcher and the respondents. The researcher, with the assistance of a Field Research Assistant (FRA), conducted the data collection. The FRA received training on data collection, study objectives, and data collection tools. A rapport was established with the respondents before starting the interview, and the objectives and overall benefit of the study were described to the participants. Participants were given a chance to ask questions before providing consent. After establishing a good rapport, interviews were conducted near their workplaces or on the streets, maintaining as much privacy as possible. During any sensitive questions regarding health and income, privacy was maintained. All interviews were audio recorded. The interviews were then transcribed in Bangla and translated into English and cross-checked by the research team to ensure accuracy and consistency.

3.9 Data Management and Quality Assurance

A unique ID was given to each participant. Identifiable information was removed during transcription. The unique IDs were used in transcription, translation, analysis, and report. The direct quotations used in the reports were anonymized by the unique IDs. Audio recordings were stored in password-protected folders/drives, accessible only to the research team. Anonymized data were stored in a shared institutional drive.

3.10 Data Analysis

Data analysis was conducted using a thematic analysis approach. After data collection, all interviews, which were conducted in Bangla, were transcribed by the researcher with the assistance of the research assistant. The transcripts were read several times thoroughly before the coding began, to build a familiarity with the data.

Both deductive and inductive coding were adopted. Deductive codes were developed beforehand based on the study objectives and existing literature review, while inductive codes emerged directly from the data, capturing themes and patterns that arose naturally from the data. A codebook was developed accordingly, with each primary code or parent node broken down into subcodes or child nodes. Direct quotations from the participants were placed in the data matrix under the appropriate codes.

The research team reviewed the codebook and emerging themes throughout the analysis process to improve the credibility of the findings. Codes and themes were repeatedly reviewed to ensure that the interpretations were consistent with the participants' narratives.

3.11 Ethical Considerations

Ethical approval from the Institutional Review Board of BRAC University was received. Interviews were conducted according to the convenience of the study participants. Before starting the interviews, participants were informed about the study objectives, potential risks, benefits, and confidentiality. They were also told that their identity would be kept anonymous and they could voluntarily participate and withdraw from the study freely at any time without giving any reason. Permission was taken from all the participants before taking pictures and audio recording the interviews. Both oral and written consent were taken from the study participants. All participants were compensated with snacks for giving their valuable time.

Chapter 4: Results

The findings of the study are presented in this chapter, starting with the description of participants' sociodemographic characteristics, followed by the themes that emerged from the thematic analysis.

Sociodemographic characteristics of the Street sweepers

Sociodemographic data of 22 street sweepers interviewed for the IDI participants are given in Table 2.

The ages of the participants ranged from 32-65 years, with most participants belonging to the 40-55 year age group. Female participants were generally older, ranging from 35-65 years, whereas male participants were comparatively younger, with ages ranging from 32-56 years. The majority of participants were married, a few female participants were widowed, and one male participant had never been married.

Most of the participants had either no formal education or had only completed primary and secondary education. Generally, in the context of the Bangladeshi education system, primary education includes classes 1-5, while secondary education covers classes 6-10. Among the participants who completed primary education, their schooling ranged from class 3-5. Two participants were categorized under the secondary level and had completed up to class 6 and class 10, respectively. Family sizes varied considerably, ranging from one to seven members. Individual monthly earnings fell between 6000-30,000 BDT, while total household income per month ranged from 10,000-60,000 BDT.

Nearly all participants had migrated to Dhaka from other districts, including Noakhali, Cumilla, Patuakhali, Barishal, Brahmanbaria, Dinajpur, and Mymensingh etc. They had been living in slums and low-income neighbourhoods across Dhaka city for years, due to the need to earn a living. The areas include Mohakhali, Mirpur, Sayedabad, Badda, Tongi, and Gabtoli. etc.

The majority of the participants of this study were employed through the master roll basis, but very few were recruited permanently. In this regard, some important differences are found between the people who work on a master role basis and the permanently employed workers. In terms of responsibilities and the nature of both types of jobs is the same. However, the permanently employed people receive significantly higher pay as well as other types of facilities, including a festival bonus and retirement benefits, etc., which are absent in the case of people employed through the master roll.

Table 2: Sociodemographic Information of Street sweepers

Characteristics	**Category**	**Frequency (n=22)**
Sex	Female	11
	Male	11
Age Group (Years)	30-39	3
	40-49	10
	50-59	6
	60 and above	3
Marital status	Married	18
	Unmarried	1
	Widowed	3
Educational Status	No formal Education	17
	Primary level	3
	Secondary level	2
Family Size	1-2	7

	3-4	5
	5 and above	10
Monthly Individual Income (BDT)	≤10,000	9
	10,001-20,000	3
	20,001-30,000	8
	Above 30,000	2
Monthly Household Income (BDT)	≤10,000	5
	10,001-20,000	5
	20,001-40,000	8
	Above 40,000	4

From the thematic analysis of in-depth interviews and key informant interviews, the study identified four key themes in alignment with the study objectives. 1) perceived health risks, 2) health problems, 3) health-seeking behaviour, 4) coping and adaptation mechanisms. These themes reflect a variety of aspects of street sweeper's lived experiences. Each is detailed in the following sections.

Perceived Health Risks among the Street Sweepers

Injury Risks

Participants perceived injuries as an unavoidable part of their occupation due to their working on busy roads, handling mixed waste containing sharp objects, physically demanding work nature, and lack of institutional support. Insufficient protective equipment and working close to vehicles created a fear of cuts, needle injuries, fractures and life-threatening accidents. The PPE that was ever provided was long ago and of poor quality. Some workers even attributed this to corruption within the distribution system. Beyond routine cuts and wounds, participants described a broader possibility of occupational injuries, including animal bites and machinery accidents like waste trucks at the dumping site. Participants shared that in this occupation, there is a constant threat of getting injured while in the workplace, but they can't help but be prepared for it. One participant explained:

"Apa, handling this kind of waste can cause many problems. If there is glass or anything sharp, it can cut our hands and feet. In places near hospitals, where needles are found, workers feel afraid because if it accidentally pricks the body, it can cause illness."(IDI 019_age 35, Female)

Key informants also supported these concerns and confirmed that workplace injuries were a common reality among street sweepers. Supervisors mentioned that workers are in fear while working on roads and often have to continue despite unsafe conditions because there is no alternative.

"On main roads, there are a large number of vehicles, and since they work on the road, accidents can happen. There is always a sense of fear among them. But there is no alternative; the work has to be done."(KII 02)

Environmental and Weather-related Exposure

Being an outdoor occupation, street sweeper is exposed to all types of weather and environmental conditions. Participants described heat, rain, dust and cold as major physical stressors that made the job more difficult. Although early mornings were generally favoured for their cooler weather and reduced traffic, there was no time of year that was particularly pleasant. During summer, especially the extremely hot days or the days when heat waves hit, was described as the hardest time of the year to work, not just because of the temperature, but also because of the smell of decomposing waste, which decomposed faster in the heat, worsening the situation further. It was a common perception among participants that sweating during work made them vulnerable to catching a cold or fever. Many participants also mentioned that during summer, piles of waste generated heat, making the air especially around the waste dumping station even more unbearable.

Participants reported the rainy season poses a significant health risk which eventually can damage their overall well-being. They added that in the summer and rainy days they can get fever from getting soaked in sweat and rainwater. The participants described how sweeping roads causes a lot of dust releasing into the air and it can affect their throat, and chest by constant exposure. Additionally, Supervisors stated that dust can lead to colds and other health issues and they advise employees to wear masks. Participants perceived recurring fever, cough and cold and breathing difficulty as a normal consequence of working continuously in extreme weather conditions. Few participants also mentioned having an ongoing cough for months now. Lack of proper clothing according to weather further increased their vulnerability during seasonal exposure. One participant described the toll of environmental exposure by emphasizing:

"There is a fear of cold entering (affecting) the chest and congestion. Vehicle smoke from the roads, dust, and heat all affect the body. When heat or dust enters the chest, it affects the throat. It causes coughing and various health problems."(IDI 002_age 50,Female)

The workers worked through illness every day without any leave instead of risking one day's salary, which only prolonged their illness and slowed recovery. A participant emphasized how workers were forced to rely on informal help from roadside vendors due to insufficient rain gear:

"If the footpath shopkeepers didn't help us with large polythene sheets, it would be even harder. The rain gear provided by the office tears easily in the wind." (IDI022_age 56,Male)

Biological Hazards and Risks

Direct and repeated exposure to contaminated waste including human and animal excreta, mixed household waste, and polluted drain water, was perceived as one of the most serious hazards by the street sweepers associated with their work. During the observation of the study, since male street sweepers do the drainage

cleaning work, they were particularly seen entering the drains which contained contaminated waste products, one of the vital reasons causing infections.

Moreover, the workers were seen wrapping their heads and hands with polythene bags before going into drains or picking waste from the roadside open drains. A very poor and inadequate attempt to shield themselves from contaminated water. The participants mentioned that it was their usual way of protecting themselves highlighting their lack of awareness of the biological agents such as bacteria, viruses and other pathogens present in the waste environment they routinely worked in. Most of the participants stated working without any protection, exposed them to contaminants that carried serious health problems. As most of the street sweepers did not receive any education, they were simply unaware of the exposure or how to protect themselves to maintain their hygiene and health. The absence of formal training further limited worker's understanding regarding disease transmission, safe waste handling, and infection prevention practices. Workers also perceived that the lack of basic hygiene facilities such as handwashing stations, clean drinking water, bathing/changing facilities raised their risk of infections. Many participants described directly touching waste with bare hands and continuing work in wet and contaminated clothing throughout the day, which they believed gradually weakened their health and increased chances of illness. A participant shared their experience of exposure to drain waste as a serious infection risk:

"Animals and psychologically unfit people defecate on the road. From residential houses all kinds of waste are there. We can't lift all the waste with a shovel; we have to touch it with our own hands by taking risks. We take care of our own safety ourselves with whatever we have. Now what to do?(IDI 017_age 42,Female)

Supervisors also agreed that since workers clean everything from domestic trash to medical waste, without wearing enough protective gear, they are regularly in contact with germs, viruses, bacteria, and infectious waste.

"There is also a risk of various infections due to exposure to germs, which can spread different kinds of diseases."(KII 05)

Chemical and Toxins Hazards

Drains frequently include gas lines, water lines, and stored hazardous gases. Unlike biological contaminants, the chemical hazards associated with this work were less visible yet potentially more fatal. The Participants mentioned how gasses trapped inside the closed drains released suddenly upon lifting the drain pit. They shared their experience of opening drains and a strong gas hitting their noses, which immediately made them nauseating. The workers have to inhale those trapped gases without any safety equipment, which was also observed during the study. Many workers mentioned that in foreign countries, drains are tested for gas levels before entry is permitted. A basic precaution that in their experience, had never been applied to their work. Some workers associated exposure to gas can lead to breathing discomfort, dizziness, nausea, and fear of sudden death inside the drain. Their use of improvised protection such as wrapping polythene reflected poor attempts to reduce exposure as there is lack of proper occupational safety training and PPE.

"When we lift drain slabs, gases come out from inside. We also have to enter the drain to work, which is very risky, and we have no safety equipment at all. In other countries, before allowing someone to enter a drain, they test whether it is safe for a person to go inside" (IDI 003_ age 32,Male)

The key informants acknowledged that there are high levels of toxic chemical gases while drain cleaning. Supervisors emphasized that workers shouldn't enter drains right away after removing the drain cover since the gas inside can be hazardous.

"When the drain pit is closed, gas can accumulate inside. You cannot go down immediately; you have to keep it open for about half an hour, otherwise it will be harmful." (KII 02)

Risk Caused by Public Actions

The activities of the general public emerged as an evident factor of occupational risk among participants. Careless driving was identified as an apparent source that endangered workers safety. The lack of public awareness and unbothered behaviour increased worker's fear, particularly during duties on busy roads and flyovers where visibility remained low and vehicles moved rapidly. Irresponsible waste disposal by the public also increased direct contact with hazardous waste and sharp materials contributing to injury and infection risk.

"Risk of getting hit by a vehicle is a major fear. Many of our co-workers have had accidents, and some have had broken hands or legs. When bus drivers drive, they have no awareness."(IDI 019_age35,Female)

Public behavior was identified by a key informant as a more fundamental problem behind increasing risk of the street sweepers. Supervisors agreed to the fact that one of the greatest threats posed by the public was unregulated traffic. They clarified that drivers commonly overlook workers on the road, particularly on main roads and flyovers, which raises the risk of tragic accidents.

"The main issue is when sweeping on main roads, vehicles are passing, so there is a risk of accidents. If they go up on flyovers, accidents can happen."(KII 01)

Perceived Risk to Mental Health

Many participants described their work as mentally burdensome due to continuous pressure, and the demanding work nature. They perceived that their nature and intensity of work created mental unrest, and burnouts in their daily lives. Workers linked this mental burden with the nature of their work, long working hours, lack of leave, overtime duties, debt burden, inability to rest during illness, and the expectation to remain available for work whenever called which contributed to emotional strain and mental exhaustion in their lives. Many participants perceived that the constant pressure of managing household expenses with low and delayed income further intensifies their mental unrest and sense of insecurity. Participants expressed their situation through feelings of pressure, loss of peace of mind, and that this work had taken over their personal and family life. Several participants explained that continuous work demand left little opportunity for rest. One participant described how the absence of leave and constant workload gradually affected his personal life and well-being:

"It feels like we have no family, no life, yet we have to keep working patiently, because this is what runs our household"(IDI005_age 50, Male)

Participants also perceived additional responsibilities beyond their regular duties as a source of mental strain. Being repeatedly assigned extra work even after completing the task beyond work shift created a sense of mental exhaustion among the workers. One participant shared:

"I swept the road and removed posters from the wall. My shift is finished. Now they have brought us to this field and are making us clean it. Isn't that kind of pressure?(angrily)"(IDI 002_ age 50, Female)

Varied and Limited Risk Perception

Among some of the participants mixed levels of perception and awareness of occupational risk and hazard emerged. Some had knowledge about what risk or disease might happen to them, while some participants had only partial understanding of health risks. Few underestimated the risk and believed that only being alert was sufficient to protect them. Formal occupational health knowledge or basic hygiene was mostly absent among the participants. Some participants acknowledged that their work could make them unwell but could not specifically explain the reason. A few others perceived their work as relatively safe and did not think it would cause them any lasting harm. Their perception seemed to develop over years of working without any formal training or health education.

"I believe if I work properly, wash my hands, and shower well, no disease will occur. I've been working for years. I haven't faced any health problems, and I believe I won't either." (IDI 006_age 55,Male)

Key informants strongly emphasized that lack of awareness was one of the major reasons for unsafe practices because workers simply did not have an idea about the risks they were exposed to.

"The work itself is entirely hazardous. They don't even realize where their illnesses come from. They can stand next to a rotting pile of waste that a normal person couldn't tolerate. It's not for the lack of safety equipment, they have a great lack of awareness."(KII 07)

Health Problems Encountered by Street Sweepers

Musculoskeletal Problems

Musculoskeletal pains had become a part of the street sweeper's lives as a result of years of physically demanding and continuous work in the same motion that extended its effects beyond the workplace in their daily lives. The most common health complaints reported by the street sweepers include pain in the shoulder, back, knees, hands and extremities. The participants shared that this pain is because they are working in this profession for a considerable time, continuously working in the same posture such as bending and standing and long working hours. Female participants particularly highlighted severe body pain and weakness as they needed to balance between work and household tasks.

"My low pressure and waist pain were not like this before. After working here, these problems have increased. Hands and legs hurt a lot while working. I stay a bit relaxed by moving, but after finishing work, it feels like I can't even lift my body, the pain increases a lot then."(ID 017_age 42,Female)

Persistent physical discomfort arising from years of strenuous and repetitive labour were not limited to only female participants. A middle-aged male participant shared his experience:

"I have pain below my chest. Because of the back pain, I cannot sit or get up properly. My knee joints hurt. After working here and going home, during sleep, my joints aches a lot."(IDI 010_age 45,Male)

Key informants also acknowledged that musculoskeletal complaints were among the most commonly observed health problems among their workers. However, despite this realization, no medical coverage or support, task rotation, or any form of relief has been given to the street sweepers who had been burned out by years of the same exhausting routine.

"Lifting heavy waste or sweeping also causes lower back pain and body pain, which are very common problems. I regularly see these kinds of issues among them."(KII 05)

Respiratory and Breathing Problems

Followed by the musculoskeletal issue, one of the commonly reported health concerns among the street sweepers is the respiratory problems. The workers associate the respiratory health problems they face to years of breathing in dust, vehicle fumes, foul odors from mixed waste and toxic gases from drains. Particularly concerning was that many participants described what began as a recurring cold or mild cough, had over time developed into something serious and difficult to manage. Both immediate symptoms like throat irritation, chest tightness, breathlessness and long term conditions like asthma were reported by both male and female participants.

"My breathing difficulties have worsened. It started from a cold. I had a cough and chest pain, so I went to the hospital. After tests, they said I had no other issues but asthma."(IDI 022_age 56,Female)

KIIs with the key informants found respiratory health problems as one of the highest prevalent health issues among their staff was respiratory condition.They emphasized that lung health could be adversely harmed by prolonged inhalation of gases, dust, and waste.

"My workers often suffer from fever, cold, and cough. Since they work all day in dust and waste, they sometimes develop breathing problems."(KII 05)

Skin Problems and Infections

Skin problems are another key health concern for the population with both male and female workers experiencing them. The workers explained noticeable skin infections such as itching, redness, infection in their nails, swelling which were due to repeated contact with waste, unclean water, dust and bad working conditions. During the observation of the study, skin conditions like rashes, redness and itching in their feet and hands were noticed. This was observed more among the male workers who were associated with work in the waste dumping station such as waste loading/unloading and drain cleaning. One participant emphasized that workers handling waste at the waste dumping site faced the worst condition as they handled mixed waste there.

"The worst situation is for those who handle waste at the container where all garbage is collected. All types of waste come there, wet, dry, everything mixed. Many people develop itching, skin irritation, redness, and rashes."(IDI 019_age 35, Female)

Another participant spoke about how the condition of her fingers and nails had steadily worsened overtime which she linked to working without any protection.

"I have problems with my fingernails and the skin on my hands. The roots of my nails swell, and the skin becomes red. I cannot eat torkari (curry), as it causes pain."(IDI 011_age 40,Female)

Gastrointestinal and Digestive Problems

Street sweepers have reported gastrointestinal problems as another health concern linked directly to their working conditions. Gastrointestinal health problems were caused by a lack of accessibility to pure drinking water, being unable to use the restroom within working hours, not eating for a long time, lack of washing facilities before eating, clean drinking water and continuous encounters with bad odor of waste products. Prolonged exposure to foul odor of decomposing waste was particularly identified as a trigger for nausea, indigestion and diarrhoea, with participants directly linking the persistent strong smell of their work environment to recurring digestive distress.

"The smell is so bad that it is difficult to even stand there. Some also suffer from stomach problems, abdominal pain, and diarrhea."(IDI019_age 35,Female)

Maintaining hygiene emerged as a further concern that came up repeatedly among participants.Workers had no access to handwashing facilities at their worksites, leaving them no option but to wipe hands on their clothes or seek out nearby houses and petrol pumps whenever needed. The inability to wash hands before eating, was perceived as a direct contributor to gastrointestinal problems such as diarrhea and abdominal pain. Moreover, not eating for long periods during work often contributed to gastrointestinal issues. Remaining without food for a prolonged period was increased by the absence of designated places to rest, change clothes, handwashing facilities and workload. Dealing with waste daily without any access to wash facilities made eating during working hours, not only inconvenient but deeply uncomfortable.

"No, facilities are available. There isn't even a tap where we can wash our hands. We clean our hands on our clothes like this (shows wiping hands on clothes) and then eat."(IDI 010_age45,Male)

Skipping meals was another pattern that contributed to digestive problems.The physically demanding nature of work, left little room for regular meals.With no designated break and continuous shift, many workers simply continued working without eating.

"During work, we often stay without eating for long periods, losing track of time, which causes gastric issues."(IDI 021_age 48,Male)

Chronic and Long-term Illness

Street sweepers who have been working for a long time in this profession have mentioned about suffering multiple chronic diseases that impacted their everyday lives, and careers. Apart from injuries, the participants shared a few chronic and long-term health conditions that affected them. The combination of daily dust exposure, physical strain, foul smell and contact with toxic hazardous waste was widely mentioned as the root cause of chronic diseases that they are suffering from such as respiratory disorders, hypertension, constant body pain, diabetes, asthma, persistent fever & cough, kidney issues etc. Notably, the workers mentioned chronic disease not as an expected outcome but as an inevitable consequence of working in this occupation.

"I currently have low blood pressure, due to which I sometimes see darkness, feel dizzy, and feel weak. Continuous lifting of waste without breaks may also contribute to weakness and dizziness."(IDI 021_age 48,Male)

Interestingly some participants highlighted their long-term health risk through a religious lens, connecting illness to Allah's will or traditional beliefs.

"Because of the heat and the gas in the waste, doing this work might cause asthma. It's said in the Hadith that touching waste causes asthma. I pray to Allah that it doesn't happen to me." (IDI 007_age 50,Male)

Although several key informants claimed to have little knowledge of the particular chronic issues impacting their employees, some of them acknowledged the chronic health hazards are connected to this line of employment. Some supervisors shared that they surely can't confirm whether participants have chronic illness or not but according to their experience, chronic illness was particularly common among older workers. One supervisor pointed out that extended exposure to gases, dust, and trash could eventually cause major lung and respiratory issues, which can affect slowly but for long term.

"I do not know if any of my workers currently have it, but these gases could potentially cause lung problems over time. It is more of a long-term issue, not immediate. "(KII 002)

Sleep Disturbance and Headache

Sleep deprivation among street sweepers is a common issue due to the working hours of their job. As they were required to start their work very early in the morning, they had to get up around 3-4 am, which constantly led to sleep deprivation. After going back home, females had to be engaged in household chores leaving no time to rest as reported by them. The consequences of sleep deprivation as stated by the participants were headache, dizziness, tiredness and low concentration etc. Participants added, they could not rest even if the doctors prescribed them to do so. Juggling between work and life made it impossible to take out some personal time to rest.

"Because of lack of sleep, there are headaches, neck pain, and blood pressure problems. Even at home there is no rest."(IDI 002_age 50,Female)

Male participants faced the same struggle, as the early morning shift demands of their occupation left little room for adequate rest, increased by the additional side jobs many had taken for their livelihood. They highlighted that even though they have a lack of sleep, but they have to continue doing it for their livelihood. Further adding if they give importance to sleep, their families suffer financially as the street sweeper's job gives them very low income.

"When I wake up early in the morning, my eyes feel watery and burn like chili because I don't get proper sleep. I feel very irritated, but who can I show this to? I myself chose this job for survival."(IDI 010_age45,Male)

Emotional Distress and Psychological Burden

Though physical health came up naturally throughout the interviews, concerns about their psychological wellbeing were rarely mentioned. Their facial expressions indicated discomfort or lack of familiarity with mental health, and most avoided direct questions or provided brief answers. However, a few respondents disclosed emotional distress experiences that appeared mostly neglected. One woman recalled crying when she first started the job, finding the work load distressing. Others described feeling frustrated and irritable on most days. Although these mentions were brief, they pointed out the emotional burden that participants found hard to describe or were not comfortable talking.One female participant described her emotions through irritability, conflict with family members and crying revealing a helplessness that she could only express at home:

"Yes, yes. I sit at home and cry. Sometimes I tell my children that I want to leave Dhaka. I no longer feel like working. I get angry with my husband and end up arguing. "(IDI 001_age 40, MasterRoll)

Male participants rarely spoke about their emotions directly. Instead, they framed emotional stress as exhaustion, financial stress and work frustration. Perhaps they were not comfortable showing themselves as vulnerable. One respondent highlighted severe stress brought on by failures at work, implying that even problems with logistics at work translated into substantial mental strain for employees with limited control over their situation:

"Sometimes I feel exhausted. When the waste trucks at Sayedabad break down, I get very stressed and tense about how to manage the work"(IDI 013_age 52,MasterRoll).

Key informants acknowledged the mental strain that street sweepers endure. They added that the street sweepers are forced to do additional duties over their fixed duties by local leaders which affects their mental and physical health and they can't do anything about it but only get frustrated as they are a vulnerable group.

Table 3: Self-Reported Health Problems Among Street Sweepers

Heath problems (multiple answer)	**Female**(n=11)	**Male**(n=11)	**Total**(n=22)
Musculoskeletal pain	7	5	12 (54.5%)
Respiratory disease	3	5	8 (36.4%)
Chronic & long-term disease	5	3	8(36.4%)
Skin disease	2	4	6(27.3%)
Headache	4	0	4 (18.2%)
Gastrointestinal problems	1	3	4(18.2%)
No Disease	1	1	2 (9.1%)

* Note: As participants mentioned multiple health problems, the same participants may appear in more than one row.

Table 3 represents the self-reported health problems among street sweepers by frequency and gender. Notably, one male and one female participant reported having no current health problems. Among participants who reported health problems, they frequently mentioned musculoskeletal pain as their primary concern. More than half of all participants (n=12, 54.5%), with a higher burden among women (n=7) compared to men (n=5). Next concerning health issue reported by participants were respiratory and chronic health issues reported by (n=8, 36.4%), where respiratory disease were reported more among male participants and chronic disease more among female participants. Skin disease was more prevalent among males (n=4) than females (n=2), while headache was reported exclusively by female participants (n=4). Gastrointestinal problems were reported by 18.2% of participants (n=4), more commonly among males (n=3).

Health-Seeking Behaviour of Street Sweepers

Places of Seeking Healthcare

Street sweeper's places to seek health care was limited and followed a linear pathway. The majority of participants first sought help from local pharmacies, then public healthcare facilities for more serious diseases, and private clinics based on affordability. Traditional healers like Kabiraj were mentioned by very few people.

"Where else can we go? We usually go to pharmacies inside the slum. If the condition is a bit serious, we go to public hospitals."(IDI002_age 50,Female)

Participants explained that they go to nearby pharmacies to seek health care, as it is a cost friendly and convenient option for them for minor issues like pain, fever, cough and digestive issues etc. Workers frequently referred to using pharmacy-based treatments for injuries, such as bandaging or taking injections, as a quick and cost-effective substitute for standard hospital care. For mild symptoms, some participants also went to healthcare facilities like Alo Clinic, a primary healthcare facility providing basic outpatient services at low or no cost, commonly used by low income communities. One female participant shared her experience of seeking health care from BIRDEM for her diabetes but made sure to give her attendance at work before leaving, so that her daily wage would not be deducted. Some participants preferred traditional healer or religious leaders such as Hujur or Kabiraj at times when they could not afford medical care and when families suspected incidents such as evil eyes (nazar) or spiritual influences. Both male and female participants went to seek health care from public hospitals only because they were affordable or the situation was serious enough according to their assumption. Participants reported not getting proper treatment from government hospitals was a normal phenomena and that's why they have trust issues. The corruption and poor service at the government hospitals were the reasons that discouraged the workers to seek health care.

"If necessary, we go to the Kormitola government hospital. There we have to buy a 10 taka ticket, and then we are sent from one floor to another. Because of this inconvenience, we mostly avoid going to government hospitals"(IDI002_age 50,Female).

Notably, few participants with their regular income preferred to go to private hospitals. They believed private hospitals provided better care, lesser hassle in terms of waiting and could be trusted easily even though with an extra expense. One participant stated that he went to a private hospital after an accident because he believed his condition needed better care, even though it was expensive.

"I only go to private ones. I don't go to government hospitals because I can't find doctors there when I go; that's why I avoid them."(IDI 020_age40, Female)

Barriers to Seeking Healthcare

Although the workers had many health problems, they faced significant challenges in seeking health care when needed. The most common and recurrent barriers stated by the participants are economic strain, time constraints, salary cuts if absent, difficulty navigating the hospitals, long waiting times, being referred from one department to another etc. Due to these factors workers continued working despite illness though their condition demanded attention.The participants claimed that their salary was so low that it was barely enough for basic necessities let alone accessing health care.

"We are poor, Apa. Even if we are sick, it is not always possible to get treatment. Going to a hospital requires a lot of money. Where will I get that money? My salary is only 8,000 taka. After spending on food and basic needs, there is hardly anything left."(IDI 001_age 40,Female)

According to the participants, for many people, formal healthcare was nearly unattainable due to their inability to pay for medical fees, tests for diagnosis, medications, and travel costs to hospitals.

"We don't have money. We cannot afford treatment. To see a doctor, it may cost around two thousand taka, but we don't even have a small amount of money to spare. All the problems are for the poor. No one looks after us; we alone have to bear such hardship." (IDI 010_age45,Male)

Delayed and Avoided Health Seeking

Though healthcare seeking is their personal choice, delaying or avoiding seeking healthcare is firmly due to the "no work no pay rule", a risk that they could not afford to take. In order to ensure daily pay, many street sweepers kept working despite being injured or ill, and solely sought medical attention when their health condition became intolerable. Participants sought healthcare only when their attempt at self-care failed or showed no improvement. Continuing work throughout illness or injury was not a sign of indifference toward their health but a conscious decision driven by economic vulnerability. One respondent shared the postponing nature of health seeking among many participants:

"As long as I can tolerate the pain, I don't seek medical treatment. Sometimes it also happens that I think of going to the doctor, but I keep postponing it day by day and never find the time."(IDI 012_age 64, Female)

For some participants, the avoidance of seeking formal healthcare was beyond financial reasons. Years of managing their health on their own was so common for them that seeking professional help felt unnecessary to them.

"When I get sick or injured, I usually handle it myself. I don't go to the hospital because most of the time I don't feel it's necessary. I myself choose not to go."(IDI 005_age 50,Male)

Coping and Adaptation Mechanisms

Normalizing Work Hardship and Risk

Despite the poor facilities, exhaustion and daily health risks, street sweepers mentioned they had eventually found ways to keep going. Over time, the overwhelming burden seemed to subside little by little, not because things had improved at their workplace for them but they had learned to live with it for survival. Participants also described doing small daily adjustments to reduce health risks while working. These included wrapping polythene around the hands to clean drains instead of bare hands, covering the nose with clothes, and being careful while handling waste. One female participant explained that the severe body pain she felt at the beginning of the job gradually became manageable and expressed accepting the work as part of survival and responsibility for her family.

"Now, Alhamdulillah, I have adjusted. Everything feels normal now. For the sake of livelihood, you have to adjust to any kind of work. I have accepted this work willingly now because if I don't do this, I will have to do some other work. If I work in a garment factory, then I won't be able to come home the whole day. "(IDI 017_age 42,Female)

Key informants also confirmed that workers had become highly accustomed to difficult working conditions and often continued working without proper protection as it became their habit from years of working. This behaviour was associated with financial hardship as they need to secure daily income and often overlook health concerns, forcing them to work under the risky conditions.

"They have become so accustomed to working without them (PPE) that, even when provided, many don't want to use them.They know that if they don't work, they won't have food. They are poor people, so they keep going. They try their best to maintain themselves just to avoid falling sick and losing wages."(KII 03).

Endurance and Tolerance

Tolerance and endurance emerged as a central coping strategy for street sweepers. Gradually, the street sweepers had learned to bear with it with no other choice left. The street sweepers made tolerance an essential skill of daily survival rather than hoping for improvement. Participants associated their endurance less with the ability to bear but more to lack of livelihood alternatives. The opportunity of limited education, low economic status, and restricted access to social networks left them no choice to get a better life, making tolerance the only practical option available for them.

"When I first started this job, I felt very upset. I used to think, 'Why did Allah bring me here? I must be very unlucky to have to do this sweeping work!' But now, over time, I have gotten used to it. Now I generally tolerate it with patience." (IDI 001_age 40,Female)

Constant exposure to waste and foul odor eliminated the street sweeper's discomfort and made the working conditions normal for them to tolerate. The street sweepers are now not bothered with the hardships as their only mode of survival is this job.

" The sad thing is that this job is now our livelihood. There is no other option. So, we just tolerate and move on with life. At least I have this job, my household is running so no matter how much suffering there is, I keep enduring. " (IDI 014_age49,Male)

Using Home Remedies & Self-Care Practices

Self-medication was something almost every street sweeper turned to at some point. Both male and female participants mostly depended on self-prescribed medication and at-home care. Simple home remedies were frequently utilized by street sweepers to treat common health issues. It was not a choice but a necessity due to their sociodemographic condition. Many participants reported utilizing easily accessible everyday items as remedies to their health condition such as mustard oil for body pain, chewing ginger, drinking coconut water and oral saline, neem leaves and over-the-counter medication to ease symptoms including cough, bodily discomfort, nausea, and dizziness, itching because formal healthcare was usually hard to access on a daily basis.

"Sometimes when I have a cough, I chew ginger. There is a tablet for coughing, when I take that, I feel better. That's all what else can I do?"(IDI 005_age50,Male)

Beyond the home remedies, participants had their own informal knowledge from past experience over the year. When something helped once, it became their go to response the next time when similar symptoms appeared. These experience based healthcare passed down through coworkers, family or simply remembered from a past experience that brought relief. Hot tea for cold, paracetamol and cold compresses to manage fever, oil message for body pain etc was learned from years of managing healthcare on their own.One female participant shared:

"When I feel unwell, I recall past remedies, like once when I felt dizzy, I drank coconut water and felt better. So now, whenever I feel unwell, I drink coconut water, thinking it will help again."(IDI 019_age 35,Female)

Support from Family and Peers

Social support from family, coworkers and relatives emerged as a vital coping mechanism among street sweepers, particularly due to the lack of institutional support. Participants described talking to family members provided some emotional relief after an exhausting work day. Though this did not solve their situation but offered a place to release frustration.

"I talk to my siblings and my parents when I feel off because there is nothing else to do."(IDI 010_45,Male)

Similarly, participants described working together for years have developed an understanding among each other. When a co-worker became sick, others would take over their tasks without hesitation. This was particularly relevant on sites where supervisor's support was limited, leaving workers to depend on each other to finish their shift.

"When I feel unwell, suppose there are two of us, I tell him that I'm not feeling good, and ask him to pull the van. He helps. We support each other. If we don't encourage one another, we wouldn't be able to continue this work."(IDI005_age 50,Male)

Accepting as Fate, Religious and personal belief

Through this research it was observed that street sweepers generally now don't hope for change in their situation be it the working conditions or their personal life. They believe this hardship, life and death are already written by Allah. The religious faith was one of the most important coping mechanisms that helped the street sweepers tolerate their situation. For all the things happening, be it working conditions or life, they just prayed and depended on Allah to give them patience, justice, and healing when all doors were closed. Participants reflected on repeated injuries, lack of institutional support, and the social devaluation of their work, yet still framed survival as dependent on Allah's will.

"Look here, my finger got cut. I didn't get any support from the company. There are countless cut marks all over my body, no end to them. But still, Allah understands us. Allah knows if something happens to them, they wouldn't be able to overcome. We handle so much waste; this is the lowest kind of work in the world. There is no work worse than this. Yet we do it, and still Allah keeps us well."(IDI 003_age 32,Male)

The dependence on faith extended to how participants managed emotional strain and dealing health problems in their daily life. Rather than expecting assistance from the authority many participants silently accepted their fate. For the workers who have limited control on their working condition, socioeconomic status, belief in almighty power made their circumstances easier to cope with and move on with life.

"No, I don't talk to anyone. I do everything on my own; the One above (Allah) is there He will see. There's no benefit in talking to others."(IDI 005_age 50,Male)

Chapter 5: Discussion

Street sweepers in Dhaka continue to be one of the most undervalued occupational groups in the city, despite their nonstop services. This study provides an understanding of the occupational safety and hazards and challenges faced by the street sweepers and gives us a deeper knowledge on the perceived health risk, health problems related to their occupation, their health-seeking behavior, and coping and adaptation mechanisms of street sweepers. Overall the findings capture essential aspects of work-related risks among street sweepers including lack of basic labour rights, absence of institutional support, inadequate implementation of policies and social marginalization due to their occupation.

The study suggests that the pathways to employment were informal through family inheritance, social networks, persuading political figures or the middleman, and sometimes bribery. As the hiring process is not transparent, the workers felt insecure throughout their work, since they could be replaced at any time. Work area allotment was based on manpower requirements rather than the safety of the street sweepers. Due to manpower shortage in some wards, females performed tasks assigned to male workers such as waste loading/unloading and transfer to waste dumping stations while receiving the same pay. Gender-based wage discrimination among street sweepers in Dhaka has been reported in earlier research as well, with Huq and Mahbuba (2015) documenting similar patterns, a direct contradiction of what some supervisors claimed. The street sweepers do not even get leave throughout the year, even on national holidays like Eid, and in that case, having overtime pay felt like a privilege to them.

It was observed that there is a direct violation of the Bangladesh Labour Rules (BLR, 2015) Sections 150 and 98 where street sweepers did not receive injury compensation and group insurance facilities. Basic facilities like toilets, safe drinking water, handwashing facilities, and rest/changing rooms were absent across all the study wards, contrary to BLA (2006) Sections 58-60. Alam et al. (2022) pointed out the inadequacy of menstrual hygiene facilities for women workers, and the findings of this study confirm that women managed their menstruation without any institutional support or facilities, which compounded their health problems. Female street sweepers also worked throughout pregnancy and resumed work shortly after delivery, despite BLA (2006) Section 46(1) guaranteeing eight weeks of paid maternity leave. However, no female worker reported receiving the benefit in this study. The street sweepers lacked formal training from the DNCC, as reported by both workers and the key informants. Occasional training provided by NGOs, and development agencies such as World Vision, icddr,b and BRAC reached only a handful of workers without a fixed schedule, well below the training requirements of the national OSH policy under Clause 4.d.7 (Ministry of Labour and Employment, 2021). Notably, a supervisor admitted that the Japan International Cooperation Agency (JICA) had formerly run a training program but that it had since been terminated, leaving a void in structured capacity building for these workers. Given the worker's account of never receiving PPE and field observations confirming zero PPE use across all study sites, supervisor’s claims that non-use was due to worker negligence are strongly challenged by the evidence. This gap of systematic claim, and worker’s experience is a clear indication of the absence of enforced rules.

Awareness and knowledge of occupational risks were mixed among participants. While some recognized risks such as sharp waste, toxic drain gases and infections, others undervalued these exposures or believed that alertness alone was sufficient protection. This is in line with the key informants in this study who reported that street sweepers have a lack of awareness. The potential risk of disease was described through a religious lens believing illness as Allah's will by many participants; a fatalistic attitude among Bangladeshi street sweepers as also mentioned by Kabir et al. (2015).

Moving on, Musculoskeletal problems were the most commonly reported health concern, affecting the majority of participants, with a higher burden among females. The comparatively lower rate in this study relative to studies by Mishra et al. (2020), Gebremedhn and Raman (2020), and Priyanka & Kamble (2017) is most likely attributable to self-reporting and the normalization of pain over years of work. However, during the observation there were clear signs of physical strain, suggesting that the real issue can be more than what the workers demonstrated. Respiratory disorders including breathing difficulty, throat irritation, and recurrent cough were widely reported concerns among participants, consistent with findings from Desye et al. (2025) and Parikh et al. (2019). As male workers were assigned exclusively to drain cleaning and waste dumping, they were in regular contact with biological and chemical hazards making them more susceptible to skin diseases than the female workers. While female workers faced a dual burden of managing both physically demanding work throughout the day and then doing the household duties, which increased the chance of fatigue, headache and exhaustion more than the male workers. Regarding the mental health issues, the workers shared that it was expressed through irritability, crying, and frustration. These responses reflected years of physical exhaustion, financial hardship, and social stigma, a pattern similarly noted by Maneen et al. (2025) among waste collectors in low and middle income countries.

The health seeking behaviour of the street sweepers can be explained through Anderson's Behavioral Model of health care utilization which identifies "predisposing, enabling, and need factors" as determinants of health service use (Alkhawaldeh et al., 2023). The predisposing and need factors included low sociodemographic status, and a tendency to normalize symptoms, with many workers seeking care only when their condition became unbearable (Alkhawaldeh et al.,2023). In this study, the enabling factors are low wages, transportation costs, no insurance, time constraints, and the no work no pay system being the significant barriers. The salary cut resulting from even one day of absence emerged as a more critical barrier to care seeking followed by the cost of care itself, a finding not prominently reported in existing literature. Pharmacies served as the first point of care among the street sweepers, consistent with findings among e-waste workers in Ghana (Asampong et al.,2015), scavengers in Pakistan (Malik et al.,2022), and waste collectors in Nepal (Saplota et al.,2020). Public hospitals were sought when self-care like applying mustard oil, drinking tea, chewing ginger and taking paracetamol failed. Though the street sweepers sought healthcare from government hospitals because of low expense but long waiting times, mistrust and perceived poor quality of care acted as barriers, a pattern of delayed and avoided health care was observed with Iyer et al.(2023) and Sapkota et al.(2020) among similar occupational groups. A small number of participants chose private hospitals despite the higher cost, trusting the quality of care worth the expense.

Street sweepers relied on a range of coping strategies including, normalising hardship, endurance, depending on family and friend's support, self-medication and through religious faith. The overwhelming burden seemed to fade over years of the same routine and working conditions being unaddressed. The participants insisted that now they can even eat while sitting beside a pile of waste. Among all the coping strategies reported, religious belief and acceptance of fate served as a last resort for workers particularly facing social humiliation, hazardous working conditions, and absence of institutional support. Despite all challenges, many workers were satisfied with their job, as years of working in the same area, familiarity with the local residents, peer support and above all the income on which their livelihood depended on. The social stigma, verbal abuse and physical harassment that they faced on a regular basis burdened their psychological well-being, a pattern consistent with what Mishra et al. (2020) and Maneen et al. (2025) have reported among similar occupational groups. While many workers wanted to leave, limited education, lack of skills, fear of unemployment and older age acted as barriers to do so. The daily experience of public disrespect, pointed to a broader pattern of social exclusion that went beyond occupational hazard. Nonetheless, the ability of street sweepers to persist through peer support, endurance, and religious faith points to a form of resilience that the system has never acknowledged. Most of the street sweepers stopped expecting to improve their lives, but held on to the hope that education would open doors of success for their children that had never been open for them.

These findings reveal a vicious cycle of vulnerability. Poor working conditions, job insecurity, harsh workplace rules push the street sweepers towards serious health risks while preventing them from seeking healthcare and as a result, they are left with no option but to cope with it.

Strengths and Limitations of the study

The study offers contributions to the existing literature alongside the limitations that are worth acknowledging. Street sweepers are among the most essential yet chronically overlooked occupational groups in urban Bangladesh. Yet, limited qualitative research has existed on the health problems they suffer from, their health seeking or the strategies they rely on for coping. The findings are strengthened by triangulation, combining in depth interviews with street sweepers, key informant interviews with supervisors and non-participant field observations. Covering six wards with varying workload also ensured a broader picture of working conditions within DNCC. However, the findings are limited to DNCC and may not reflect the experiences of street sweepers under DSCC or in other cities across Bangladesh. Since health problems were self-reported the true burden of illness may be greater than what participants reported. There remains a possibility of social desirability bias meaning workers may have given socially acceptable answers rather than being fully honest especially on sensitive topics and the presence of researchers may have influenced how participants conducted themselves naturally.

Implications for Public Health Policy and Practice

Street sweepers in Dhaka work within a system where legal protection exists but rarely reach the people they were designed for. Transparent employment structures, mandatory occupational training and basic workplace facilities must be treated as non-negotiable minimum standards rather than occasional privileges. Given the gender disparities observed, the DNCC must give special attention for targeted protection for female workers including maternity rights, menstrual hygiene facilities and equitable task distribution. At the practice level, since pharmacies serve as the primary point of care, community health workers and pharmacists must be sensitised to the occupational health needs of this group. Above all, improving the health and dignity of street sweepers is not an act of charity but a matter of justice for a workforce whose contribution to urban public health remains invisible and unrecognized.

Chapter 6: Conclusion and Recommendations

6.1 Conclusion

The urban city depends on the street sweepers for their invaluable cleaning service, still the street sweepers in Dhaka remain largely unprotected. Despite their critical role in maintaining urban sanitation and public health, they face the increased burden of poverty, social stigma and system neglect. The findings of this study reveals the occupational health and safety challenges faced by street sweepers are not accidental but they are the direct result of the system that demands their work but fails to protect them in return.

The occupational hazards that these workers face daily be it physical, toxic chemical or biological exposure and environmental stress affects the physiological and psychological health of the street sweepers over time. Yet, the laws and regulations that are made to protect them for instance active PPE distribution and usage, basic workplace facilities, training enforcement are largely missing in practice. The street sweepers lacks accessible and affordable health care and have adapted to their situation not by accepting it out of their will but they have no alternative but to cope with it.

Protecting the health, safety and dignity of the street sweepers is a necessary step toward achieving the SDG 3 “good health and well-being” & SDG 8 “decent work and economic growth” for the urban workforce. Bangladesh has legal policies in paper, but the gap is in the commitment to enforce these laws into action. Through generating this qualitative evidence on health-seeking behaviour and coping mechanisms among street sweepers in Dhaka, the study opens the door for future intervention, advocacy and research aiming to improve their health and working conditions.

6.2 Recommendations

Based on the study findings, some practical recommendations can be made to improve the occupational health and safety of the street sweepers.

Firstly, the labour protection guaranteed under the Bangladesh labour policies must be strictly enforced, ensuring paid leave, overtime and injury compensation, insurance benefits, wash facilities, drinking water, maternity benefits, first aid facilities, and PPE provision across all the wards. Alongside this, training and awareness programmes and monitoring should be introduced. The persistent demand from street sweepers for permanent employment status of the master roll employees should be addressed, as job insecurity is one of the significant sources of vulnerability for this group, contributing to financial stress and health issues. Workers should also be able to access essential health care services without organizational barriers, particularly the no-work-no-pay system that currently forces many of them to delay or avoid seeking care. In addition, the key informants suggested practical field-level measures, such as improved CCTV coverage for female worker safety and removal of the temporary roadside establishments, that may help reduce harassment and excessive workload. Finally, future research should go beyond DNCC and look at street sweepers in other city corporations and urban areas across Bangladesh.

Declaration of GenAI Use

I, Mahira Hassan, declare that I used (Google Translate and Gemini 3) to translate my data collection tools, information sheet and consent form from English to Bangla as a supporting tool. I also translated the transcription from Bangla to English using ChatGPT as a supporting tool only to make the process faster. I did not use AI to develop my thesis report. All the references, ideas and conclusions are my original work in line with JPGSPH academic integrity guidelines.

References

Afroz, A. (2025). Inside Dhaka's waste management crisis. The Business Standard.

https://www.tbsnews.net/features/panorama/inside-dhakas-waste-management-crisis-1292891

Ahmed, M. Z. (2005). Modernization of solid waste management practices in Dhaka through public and private sector participation Bangladesh University of Engineering and Technology

http://lib.buet.ac.bd:8080/xmlui/bitstream/handle/123456789/1679/Full%20%20Thesis%20.pdf?sequence=

Alam, M., Sharior, F., Shoaib, D. M., Hasan, M., Tabassum, K. F., Ferdous, S., Hasan, M., Rahman, M., Tidwell, J. B., Zaqout,M., Farah, M., Rahman, M. A., Ahmed, A., & Ahmed, T. (2022). Hygiene knowledge and practices and determinants of occupational safety among waste and sanitation workers in Bangladesh during the COVID-19 pandemic. Hygiene and Environmental Health Advances, 4, 100022. https://doi.org/10.1016/j.heha.2022.100022

Alamgir, H. M.(2020). Safety of cleaners, street sweepers and garbage collectors. The Financial Express.

https://thefinancialexpress.com.bd/views/views/safety-of-cleaners-street-sweepers-and-garbage-collectors-1601048893

Alkhawaldeh, A., ALBashtawy, M., Rayan, A., Abdalrahim, A., Musa, A., Eshah, N., Abu Khait, A., Qaddumi, J., Khraisat, O., & ALBashtawy, S. (2023). Application and Use of Andersen's Behavioral Model as Theoretical Framework: A Systematic Literature Review from 2012-2021. Iranian journal of public health, 52(7), 1346–1354. https://doi.org/10.18502/ijph.v52i7.13236

Asampong, E., Dwuma-Badu, K., Stephens, J., Srigboh, R., Neitzel, R., Basu, N., Fobil, J. N., & Batterman, S. (2015). Health seeking behaviours among electronic waste workers in Ghana. *BMC Public Health*, *15*,1065.

https://doi.org/10.1186/s12889-015-2376-z

Bangladesh Institute of Labour Studies. (2015). Occupational Safety Health In Bangladesh:National Profile.

https://bilsbd.org/wp-content/uploads/2022/03/BILS-ILO-Study_OSH-Profile_Final-Report_29-June-2015.pdf

Bangladesh Labour Act, 2006. Ministry of Law, Justice & Parliamentary Affairs. (2006). The Bangladesh Labour Act, 2006 .MCCIBD.

https://mccibd.org/wp-content/uploads/2021/09/Bangladesh-Labour-Act-2006_English-Upto-2018.pdf

Bangladesh labour rules, 2015. (2015). People's Republic of Bangladesh, Ministry of Labour and Employment. (Gazette Notification No. S.R.O. 291-Law/2015). The Bangladesh Gazette.

https://bef.org.bd/wp-content/uploads/2021/08/Bangladesh-Labour-Rules-2015-English_Unofficial.pdf

Chandra, B., & Parasar, A. (2026). Empowerment and environmental vulnerability: a study of Harijan women waste workers in urban Dhaka. GeoJournal, 91(1).

https://doi.org/10.1007/s10708-025-11560-w

Chinthapatla, S., & Tiwari, R. (2024). Occupational injuries and health-seeking behavior of informal sector waste collection workers in Nellore, India. Indian Journal of Community and Family Medicine. https://doi.org/10.4103/ijcfm.ijcfm_83_23.

Desye, B., Geto, A. K., Berhanu, L., Daba, C., & Berihun, G. (2025). Occupational respiratory symptoms and associated factors among street sweepers in low- and middle-income countries: A systematic review and meta-analysis. *PLOS ONE, 20*(4), e0320237. https://doi.org/10.1371/journal.pone.0320237

Department of Inspection for Factories & Establishments. (n.d.). Bangladesh National Portal. Ministry of Labor and Employment.

https://dife.kishoreganj.gov.bd/en/site/files/iwLJ-%E0%A6%AA%E0%A7%87%E0%A6%B6E0%A6%BE%E0%A6%97%E0%A6%A4-%E0%A6%B8%E0%A7%8D%E0%A6%AC%E0%A6%BE%E0%A6%B8%E0%A7%8D%E0%A6%A5%E0%A7%8D%E0%A6%AF-%E0%A6%93-%E0%A6%B8%E0%A7%87%E0%A6%87%E0%A6%AB%E0%A6%%E0%A6%BF

Department of Inspections for Factories and Establishments (DIFE).(n.d.)MANAGING HEALTH & SAFETY IN THE WORKPLACE.Ministry of Labour and Employment.

https://file.portal.gov.bd/files/dife.sylhet.gov.bd/page/a49965e4_8f36_4c45_9abc_5ea0a139fe3f/9759b24765c762771aac52442fa1d1c6.pdf

Department of Inspections for Factories and Establishments. (2021). National plan of action on occupational safety and health 2021–2030. Ministry of Labour and Employment.

https://file-chittagong.portal.gov.bd/uploads/9cdd11d6-4e9a-420ab0a489080e10b52d/638/edf/e37/638edfe37a3f8451119126.pdf

Gebremedhn, M. G., & Raman, P. V. (2020). Socio economic and health status of street sweepers of Mekelle city, Ethiopia. *Waste Management, 103*, 251–259. https://doi.org/10.1016/j.wasman.2019.12.024

Hossain, S., Hossain, M. F., Liu, B., Ara, A., Alsaoud, H., & Patwary, M. A. M. (2025). Health Challenges Among Waste Collectors in Bangladesh: Exploring Risk Factors Using Multi-level Modeling. Safety and health at work, 16(1), 13–20.

https://doi.org/10.1016/j.shaw.2024.10.007

Huq,N & Mahbuba,S. (2015). Living Dirty Life While Keeping Roads Clean: A Case Study on the Street Cleaners of Dhaka City. IOSR Journal of Business and Management (IOSR-JBM)e-ISSN: 2278-487X, p-ISSN: 2319-7668. Volume 17, Issue 5.Ver. IV, PP17-20. www.iosrjournals.org.

https://www.iosrjournals.org/iosr-jbm/papers/Vol17-issue5/Version-4/D017541720.pdf

Islam, M. J. (2023). Cleaning the city in an unclean way. The Business Standard https://www.tbsnews.net/bangladesh/cleaning-city-unclean-way-572046

International Labour Organization.(2025). Health, safety and Dignity of sanitation Workers: An initial assessment.

https://www.ilo.org/publications/health-safety-and-dignity-sanitation-workers-initial-assessment

Iyer, S., Shah, H., Patel, J., Panchal, V., Chaudhary, S., & Parmar, T. (2023). Exploring the Lives of Women Rag Pickers in an Indian Metropolitan City: A Mixed-Methods Cross-Sectional Study on Social and Occupational Determinants Shaping Their Existence. Cureus, 15.

https://doi.org/10.7759/cureus.47464.

Jerin, D. T., Sara, H. H., Radia, M. A., Hema, P. S., Hasan, S., Urme, S. A., Audia, C., Hasan, M. T., & Quayyum, Z. (2022).An overview of progress towards implementation of solid waste management policies in Dhaka, Bangladesh. Heliyon, 8(2), e08918.

https://doi.org/10.1016/j.heliyon.2022.e08918

Kabir, A., Farhana, N., Akter, F., Jesmin, S., & Ali, A. (2015). Sweeping practices, perceptions and knowledge about occupational safety and health hazards of street sweepers in Dhaka city, Bangladesh: a qualitative inquiry. International Journal of Community Medicine and Public Health, 237–243.

https://www.researchgate.net/publication/328576786_Sweeping_practices_perceptions_and_knowledge_about_occupational_safety_and_health_hazards_of_street_sweepers_in_Dhaka_city_Bangladesh_a_qualitative_inquiry

Kabir, A., Maitrot, M. R. L., Ali, A., Farhana, N., & Criel, B. (2018). Qualitative exploration of sociocultural determinants of health inequities of Dalit population in Dhaka City, Bangladesh. BMJ open, 8(12), e022906. https://doi.org/10.1136/bmjopen-2018-022906

Kabir, S. L. (2023). Occupational health and Safety (OHS) cost measures for the sweepers at Jashore and Benapole Paurashava in Bangladesh. Journal of Developing Economies, 8(1), 128–143. https://doi.org/10.20473/jde.v8i1.38928

Kim, T. J., & von dem Knesebeck, O. (2015). Is an insecure job better for health than having no job at all? A systematic review of studies investigating the health-related risks of both job insecurity and unemployment. BMC public health, 15, 985.

https://doi.org/10.1186/s12889-015-2313-1

Lagura, G. B., & Ligan, V. O. (2018). What is Life for Job Order Street Sweepers in the City Governments of Davao Region?A Phenomenological Study. International Journal of Management Excellence (ISSN: 2292-1648), 11(1), 1498–1512. https://www.researchgate.net/publication/346079040_What_is_Life_for_Job_Order_Street_Sweepers_in_the_City_Governments_of_Davao_Region_A_Phenomenological_Study

Local Government (Municipalities) Act, 2009. (2009). Government of the People's Republic of Bangladesh. Legislative and Parliamentary Affairs Division.

http://bdlaws.minlaw.gov.bd/act-1026.html

Macrotrends. (n.d.). Dhaka, Bangladesh metro area population (1950–2026).

https://www.macrotrends.net/global-metrics/cities/20119/dhaka/population#:~:text=The%20current%20metro%20area%20population,End%20of%20interactive%20chart.

Malik, B., Lyndon, N., Chin, Y. W., Hussain, B., & Malik, S. (2022). Health Help-Seeking Behavior: The Scavengers' Perspective. International journal of environmental research and public health, 19(11), 6457. https://doi.org/10.3390/ijerph19116457

Maneen, S., Botha, N. N., Amoadu, M., & Ansah, E. W. (2025). Psychosocial work factors influencing health, safety, well-being and productivity of waste collectors in developing countries: a scoping review. BMC Psychology, 13(1), 885.

https://doi.org/10.1186/s40359-025-03251-5

Miller, J & Sohapy, O. (2025). Health and Occupational Hazards of Informal Waste Pickers in Bangladesh: A Comprehensive Analysis of Risks, Vulnerabilities, and Public Health Implications. https://www.researchgate.net/publication/396176787_Health_and_Occupational_Hazards_of_Informal_Waste_Pickers_in_Bangladesh_A_Comprehensive_Analysis_of_Risks_Vulnerabilities_and_Public_Health_Implications#:~:text=In%20a%20thorough%20review%20of,marginalization%20perpetrated%20by%20the%20society.

Ministry of Labour and Employment. (2021). Department of Inspection for Factories and Establishments. International Labour Organization. https://file.portal.gov.bd/uploads/3dcd66e7-10a4-41f9-8f5f-c2777d4103fb/636/bd5/813/636bd5813ebdf644647560.pdf

Mishra, T., Sukhsohale, N., & Mankeshwar, R. (2020).Occupational health morbidities and associated socio-demographic variables among street sweepers. International Journal of Community Medicine and Public Health.

https://doi.org/10.18203/2394-6040.ijcmph20204367

Occupational safety and health. (2025). International Labour Organization.

https://www.ilo.org/bureau-employers-activities/areas-work/occupational-safety-and-health#:~:text=Occupational%20safety%20and%20health%20(OSH,and%20preferred%20supply%20chain%20relationships

Occupational Safety and Health In Bangladesh: National Profile Bangladesh Institute of Labour Studies.(2015). Bangladesh Institute of Labour Studies-BILS

https://bilsbd.org/wp-content/uploads/2022/03/BILS-ILO-Study_OSH-Profile_Final-Report_29-June-2015.pdf

Oe, J., & Ua, J. (2020). Occupational hazards and health problems among street sweepers in Uyo, Nigeria. Ibom Medical Journal. https://doi.org/10.61386/imj.v13i2.191.

Parikh, S., Shah, A., Davda, B., & Bala, D. V. (2019).Study of noncommunicable diseases among the street sweepers of muster station, Ahmedabad Municipal Corporation. Indian Journal of Community Medicine, 44(3), 225–227.

https://journals.lww.com/ijcm/fulltext/2019/44030/study_of_noncommunicable_diseases_among_the_street.10.aspx

Priyanka, V. P., & Kamble, R. K. (2017).Occupational health hazards in street sweepers of Chandrapur city, central India. International Journal of Environment, 6(2), 9–18.

https://doi.org/10.3126/ije.v6i2.17358

Sabde, Y. D., & Zodpey, S. P. (2008).A study of morbidity pattern in street sweepers: A cross-sectional study. Indian Journal of Community Medicine, 33(4), 224–228.

https://pmc.ncbi.nlm.nih.gov/articles/PMC2763693/

Sapkota, S., Lee, A., Karki, J., Makai, P., Adhikari, S., Chaudhuri, N., & Fossier-Heckmann, A. (2020). Risks and risk mitigation in waste-work: A qualitative study of informal waste workers in Nepal. Public Health in Practice, 1, Article 100028.

https://www.sciencedirect.com/science/article/pii/S2666535220300276

Seo, P. (2025). Occupational Health & Safety (OHS): A complete Overview & Compliance guide. ASSA.

https://assa.com.au/occupational-health-safety-ohs-a-complete-overview-compliance-guide/#:~:text=OHS%20covers%20both%20the%20physical,to%20ensure%20they%20remain%20effective

Sharior, F., Alam, M., Zaqout, M., Cawood, S., Ferdous, S., Shoaib, D. M., Tidwell, J. B., Hasan, M., Hasan, M., Rahman, M., Farah, M., Rahman, M. A., Ahmed, A., & Ahmed, T. (2023). Occupational health and safety status of waste and sanitation workers:A qualitative exploration during the COVID-19 pandemic across Bangladesh. PLOS Water, 2(1), e0000041.

https://doi.org/10.1371/journal.pwat.0000041

Sultana, N., & Tania, F. (2025). Sweeping practice and knowledge about occupational safety and health hazards of sweepers. International Journal of Current Research.

https://www.journalcra.com/article/sweeping-practice-and-knowledge-about-occupational-safety-and-health-hazards-sweepers

Sultana, N., Asaduzzaman, M., Siddique, A. B., Khatun, H., Bari, F. S., Islam, M. N., Tabassum, A., Mondol, A. S., Sayem, M. A.,Abdullah, A. Y. M., Hossain, M. P., & Biracyaza, E. (2022). Job insecurity and mental health related outcomes among the humanitarian workers during COVID-19 pandemic: a cross-sectional study. BMC psychology, 10(1), 265.https://doi.org/10.1186/s40359-022-00974-7

Thomson, B., & Hünefeld, L. (2021). Temporary Agency Work and Well-Being—The Mediating role of job insecurity. International Journal of Environmental Research and Public Health, 18(21), 11154.

https://doi.org/10.3390/ijerph182111154

WaterAid (2020). Assessing the usability of personal protective equipment for sanitation workers in tropical countries. WaterAid: London, UK. https://washmatters.wateraid.org/sites/g/files/jkxoof256/files/assessing-the-usability-of-personal-protective-equipment-for-sanitation-workers-in-tropical-countries.pdf?