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Informal child labor in Dhaka City

Exploring the pull factors and health sufferings
of children involved in waste management

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Informal child labor in Dhaka City: Exploring the pull factors and health sufferings of children involved in waste management



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Summary

Child labour is a major social and public health conundrum in many developing countries. 152 million children (64 million girls and 88 million boys) are still engaged in child labour. Despite increasing research over the last two decades on the detrimental impacts of child labor, it remains a significant concern globally. Waste management (WM) often remains unregulated, and it is easy for disadvantaged and poor children to get involved in this hazardous sector, as they find this easy access to livelihood opportunities. It was estimated that one out of every six children in Bangladesh is working. In this backdrop, this study considers the city waste management sector and attempt to understand the socioeconomic profile of the children working in this sector in Dhaka City, Bangladesh, their working conditions, terms, and conditions in their formal and informal contracts, and to review existing intervention and policies regarding child labor. This study proposes a mixed methods study among children (aged between 5 and 17 years) involved in WM including waste collection from home, waste segregation and recycling at secondary transfer station. Under the quantitative component, a total of 335 participants were surveyed. As for qualitative survey, an ethnographic approach was adopted which included in depth interviews and focus group discussions (FGDs) with the target population (child waste worker, aged 5-17), key informant interviews (KIIs) with recruiters and stakeholders. Collected information was initially analysed in respect of multiple demographic and socioeconomic variables (age-group, marital status, educational attainment, employment details) later triangulated utilizing collected qualitative information from the fields.

The most prevalent reason for children being engaged in waste management is to lessen the consequences of the economic downturn and poverty caused by a financial crisis and the necessity to support one's family. As well as migration, drop out from the school due to pandemic, family involvement also contributes as push factors. In terms of pull factors, children involved in the waste management sector due to the availability of job which does not require any formal education, experience, or training. While in the case of recruiters, they prefer child waste workers as they can employ children with minimum wages.

In terms of working conditions, there is no such facilities for most of the child waste workers including access to safe-drinking water, toilet facilities or dining facilities. Children are required to work as many hours as they can because there are no set working hours for them. Findings show that child waste worker worked for 8.2 hours a day on average. While 16.4% of respondents worked more than 10 hours per day. On the other hand, most reported hazards that children were exposed to included dust, fumes, and smoke (86.9%), dangerous tools and knives (64.5%), and loud noise and vibration (59.1%). The children were also exposed to hazardous wastes like Organic material (disposable diapers, toilet paper)

(44.1%), and Hospital waste (gauze, disposable syringes, needles) (28.4%). Also, several wild/stray animals roam around the workplace. About 49.8% of respondents reported that they were abused in the workplace at least once. The children were constantly shouted at, repeatedly insulted, and were physically hurt in some way. Unfortunately, child waste workers are still very ignorant. Only 9.3% had safety equipment, while none had all the necessary equipment.

In terms of health sufferings, children who work in waste management are particularly vulnerable to occupational injuries and health issues that vary from mild to catastrophic. Musculoskeletal pain, Respiratory problem, cutting off the skin, especially the hand and leg, during collection and sorting of waste is very frequent, like it's a part of their life. Due to lifting and carrying heavy loads, pain in shoulder, neck, hand, and lower side of the back were found to be more common. Almost 91% of child waste workers reported suffering from musculoskeletal pain. Also, skin problems were found to be very high (found among 91.9% respondents). Calluses (60%), itching and rash (57%), blisters (48.7%), and nail problems (44.2%) were the most common skin problems. Almost 78% of the respondents reported about incident of cuts during work. They also suffered from puncture wounds (15.5%) and hit/bruise (9%). Health service's seeking behaviour among child waste collectors is also alarming. Study findings show that they never used to go to the hospital or doctor for minor injuries like needle piercing or tiny cuts to the hands and feet. To cure this kind of injury, they use a home remedy, even if sometimes they don't do anything. While some of the respondents mentioned having tetanus injections once a month to protect themselves from the risk of infection. The child does not seek health service from a hospital or doctor because of their poor income.

Even though there are numerous children employed in the waste management sector, these children are usually excluded from traditional child protection and support systems, making them more susceptible to bullying and other workplace hazards. A comprehensive, multi-sectoral policy initiative is required to reduce such hazardous child labour. To formulate a focused policy and effective intervention, governments should regularly collaborate with the relevant employers' and workers' organisations to update their "hazardous child labour lists." Relevant awareness campaign should be created at the individual and community level to inform about the obligations for eliminating hazardous child labour by emphasizing on alternate income-generating programmes for this group of children.

Chapter 1. Introduction:

Child labor is widespread around the world. At the beginning, children have been incorporated into work as early as possible in order to contribute to their families. They primarily began working within the family circle, doing a variety of jobs such as pastoral, farming, agricultural, and domestic work. Children are getting engaged in labor for the survival of themselves and their family as well. The contemporary interpretation of child labor, as framed in the discourse of children's rights, articulates very clearly what should characterize an ideal childhood based on the conditions of the developed world and middle-class families worldwide[1]. Child labor is merely defined as the long-term and consistent employment of children under a certain legal age[2]. The term "child labor" refers to the employment of children in any work that deprives them of all or most of their rights as children, such as the right to regular school attendance and uninterrupted mental and physical development[3]. "Child labor" is defined by UNICEF as "work that is likely to interfere with a child's education and development; labor that exceeds a minimum number of hours; hazardous labor; and/or labor performed by a child who is underage according to state legislation." "A child is defined as a person under the age of 18." Child labor has a micro-level impact on children's families, as well as significant implications for developing countries' long-term growth, because human resource development is critical to a country's economic development[1].

1.1 Global scenario of child labor:

Child labor is a global concern since child labor, in its exaggerated form, reveals a labor problem that is deeply woven into the fabric of an unequal society[4]. It is also associated with a lack of access to educational institutions, extreme poverty, and gender inequality[2]. Remarkably, not all forms of labor performed by children are considered child labor. It is emphasized that employing children with no negative consequences for their physical health or mental development is generally regarded as positive. But Children are toiling for long time on the contrary of minimal pay. From the beginning of child labor to the present day, it has been a source of great exploitation [4]. Globally, children can be found working in various industries like agriculture, construction, fishing, mining, small-scale businesses, the informal sector, and manufacturing for export and domestic sales as well as in homes for child care of family members, assisting in cleaning and cooking, and so forth [5]. Children involved in labor force for their survival mainly due to poverty, unhealthy family life, economic deprivation, and lack of education[6]. All this factor thus forces children and their family to migrate towns and cities, or even above where

there are income and employment opportunities. The very recent global estimates show that 160 million children engaged in child labor at the beginning of 2020 among them 63 million are girls and 97 million are boys accounting for nearly one-tenth of all children[7]. However, over the last four years, the overall percentage of child labor remained same, but more than eight million children have been newly added.

Most terrible is that the number of young children (aged 5 to 11 years) increased dramatically and accountable for half of the total. The magnitude of child labor is significantly greater in Sub-Saharan Africa, and in developing countries, one in every four children (ages 5–17) is engaged in industry and non-industry occupations in these regions[7]. Sub-Saharan Africa has a child labor prevalence of 24%, which is three times that of Northern Africa and Western Asia, the regions with the second highest prevalence. Sub-Saharan Africa has nearly 87 million more children in child labor than the entire world collectively[7].

1.2 South Asian Context:

Countries of south Asian are developing and most of the population are living below poverty line. The continent is densely populated, and a large portion of the population does not even have access to basic needs. A large proportion of children involved in work due to poverty. In some cases, children as young as 5-6 years old begin to participate in the work. Children in South Asia work in a variety of occupations, including carpet weaving, automobile repair shops, surgical industries, and domestic work[8]. A recent estimates shows that, there are almost 16.7 million children (5-17 years) in child labor where 10.3 million of them are aged 5 to 14 years[9]. Among countries, India has taken the leading position where almost 12.6 million are engaged in child labor[10]. Though, non-governmental estimates suggest that forty million children may be working in some capacity, accounting for approximately 13% of the labor force[11]. Again, approximately 3.3 million children in Pakistan are involved in child labor wo are estimated to make up 90% of the workforce in some industries[8]. The majority of child laborers are unpaid as employers hired them as helpers, on the other hand, if some of them are paid, it is a fraction in comparison to adult workers. On the other hand, the extent of child labor in Nepal is more stringent than in India. According to statistics, one out of every three children under the age of 15 in Nepal is economically active. Every child laborer in Nepal is regarded as a tangible symbol of a marginalized and vulnerable family, with 2 million labeled as employed between the ages of 5 and 14[12].

1.3 Bangladesh Context:

Child laborers are a prominent feature of everyday life since young children serve at roadside tea stalls and weave between cars selling goods to motorists are quite common here. Children in Bangladesh perform variety of tasks including agricultural work, domestic work, welding, carpentry, rickshaw pulling and automobile repair. A significant number of children in the industrial sector work up to 16 hours a day carrying heavy loads, operating hazardous machinery, and handling chemicals without safety precautions[13]. According to the Child Labour Survey Bangladesh 2013, among 39.65 child population, almost 3.45 million are working children aged between 5 and 17 years, and 1.70 million are engaged in child labor[14], which is about 4.30 percent of the entire child population and 49.3 percent of working children. It was estimated that one out of every six children in Bangladesh is working. Child labor Survey also indicates that 1.28 million children involved in hazardous work.

1.4 Objective of the research

The objectives of the study are:

1. To determine the socio-demographic characteristics of children and track the pathways in getting involved in the WM sector.
2. To examine their knowledge, practices in collecting & sorting waste, and determine the associated health suffering's.
3. To assess the effect of COVID-19 on their income and employment opportunities and their daily life.

Chapter 2. Literature review:

2.1 Pathways of getting involved in waste management (WM):

Child labor as a combined product of individual, household factors, and community factors. Child labor has already been studied by a number of researchers. Researchers came up with a number of factors that affect child labor in various parts of the world. Here are the results of some of the most recent research to date. Child labor was influenced by many factors from different directions.

Socioeconomic factors are the most common causes and parents involve children in their work since they are unable to provide the most necessities of their children. Therefore, the most common associated factors that is responsible for the child labor is poverty, since parents are impoverished and their poverty cause them to employ their children. Parents assigned to various employment sectors such as industries, organizations, residences, and other chances that are available to them based on their residential locations from an early age [15]. Education is another major factor. Because education is so costly, poor parents are unable to support their children so that they can benefit from learning. Additional factors influence parental decision-making as well. Another important factor is long distances from school which diminish the opportunity to participate in job activities, raising the standard of uneducated child labor[16]. Most importantly, the root causes are the absence of parents' education i.e. parents themselves are unaware as they are illiterate and unaware of the value of education, they choose to include their children in money activities[17]. They simply strive to get money on their children's earnings. They are not focused on the future of their children, despite the fact that educating their children would be a valuable treasure for both them and the country[18]. Parental decisions for child labor are also influenced by the availability of child-friendly jobs in the local labor market and the characteristics of available educational facilities[19].

Another crucial factor attributed to child labor, according to the study, is household income[20]. The low level of monthly income, on the other hand, reveals a substantial position in child labor. When a family's monthly income is inadequate, they are unable to provide for their children's fundamental needs such as food, education, and shelter [18]. The household with better income has negative impact on child labor. Again, Large family size and age of the child increase the likelihood of child labor[21]. Household size and family structure also stimulus child labor[22].

In Bangladesh, majority of the population living below poverty line and the poor families are unable to provide enough care for their children. In such situations, parents believe that it is preferable for their children to support their profession or work in any other job to supplement the family's income, which

leads to the involvement of children in a variety of jobs. The children's lives are made even more susceptible and unpleasant by low family income, social difficulties, family division, divorce of the parents, mothers, or father's death, and second marriage of the parents. Resulting, kids start to live in the road side, slums or somewhere else, without family supervision, which drive a child to be a labor[23]. The informal sector employs a substantial portion of the Bangladeshi workforce, especially child labor. In the context of Bangladesh, poverty is the main push factor that drives the child labor forward[24]. The decrease in income from the disease or disability experienced by the head of the family in Bangladesh may be a significant predictor of the workforce involvement of children[25]. Their parents could not afford the cost, 27 percent quit school. 4.2% of children quit school to work on a family farm and other revenue-generating activities[26]. There is broad agreement that family poverty is primarily responsible for child labour, in numerous research which has studied the causes of child labour. The majority of working children are hired by their parents[27].

2.2 Waste management knowledge, attitude, and practice:

Proper management of municipal solid waste remains a significant thread in metropolitan areas throughout the globe, especially in emerging nations' fast-growing cities and metropolises[28]. The rate of municipal solid trash has accelerated rapidly by the increasing populations, fast economic development and increased community living standards[29]. A variety of knowledge, attitude and practice issues afflict solid waste management in emerging nations (KAP)[30]. Huge number of waste gets up in our waste drains, causing flash flooding and the obstruction of drainage, municipal trash being disposed of alongside poisonous and hazardous wastes[31]. Solid garbage produced in Port-Harcourt City may be stored on roadways or the roadside, in unauthorized dumping facilities or in open areas that have a detrimental impact on the environment[32]. On the riverside near the town, solid garbage from the Kathmandu Valley was deposited. The waste management authorities began utilizing trash for the building of highways on the bank of the Bagmati River[33]. Result of a research indicated that there are many reasons why separation and recycling programs are not included; includes no particular order: Lack of knowledge about recycling programmes, not access to recycling bins[34]. In order to recycle the waste, plastic bags and papers were gathered for reuse but on a lesser scale and by low-frame scavengers[30]. MSW is produced daily and subsequently processed in India through the use of MSW standards of 145 million tons. In this method 85% of the MSW is collected by the Municipal Corporation and the remaining 15% is dumped directly[35]. Most people have received their information through newspapers, television and radio, and no suitable recycling network is still

available in the country. Many individuals had not been notified of the placement in the local neighborhood of their homes of the recycling bins for trash disposal[34] .

2.3 Occupational Health sufferings among children

Child labor remains a health hazard, affecting mental, physical, and emotional well-being of children. Globally, a notable proportion of children engaged in hazardous jobs suffer from acute physical injuries and illnesses[36]. Hazardous child labor can be observed over a wide range of occupational sectors including agriculture, construction, mining, manufacturing, domestic service, waste management etc.[5]

Given that waste management is still poorly managed and often remains unregulated, thus disadvantaged and poor children find this as easy access to livelihood opportunities. Many waste pickers are mainly children and women in developing countries and they collect waste from waste bins and open waste heaps, and they contribute economically to their families for survival [37]. It is known that waste collectors are exposed to various accidental risks, such as traffic accidents by waste vehicles, caught in and between the trash compressor, cut/puncture by sharp waste materials, slipping, or falling down [38, 39].

Work-related injuries and illnesses are multifactorial and persist to be major public health issues and are a source of substantial human and economic cost in both developed and developing countries [40-42]. Occupational injury is any physical injury condition sustained on a worker in connection with the performance of his or her work [1]. Since injury is a leading cause of death and disability among children worldwide, preventing child injury is closely connected to other issues related to children's health. Tackling child injury must be a central part of all initiatives to improve the situation of child health and the well-being of children [43]. But hazardous child labor has deep and complex roots, so short-term approaches have insignificant impact. Still, this is an under-researched area and there is lacking in reliable official data to effectively address the nature and extent of child labor. Most importantly, the evidence of adverse health consequences of child labor in the context of Asian countries is limited. Information to policy makers to improve the working conditions as a result, is limited.

2.4 Impact of COVID-19 on their income and employment opportunities and their daily life:

On 30 January 2020, the World Health Organization (WHO) announced that the severe acute respiratory syndrome coronavirus (COVID-19) is a global concern [44]. New coronavirus outbreak and development of COVID-19 diseases worldwide have severely impacted human productivity and existence[45]. The COVID-19 epidemic resulted in a worldwide economic slump as public space and essential local enterprises were shut down and social contacts were restricted, and international supply networks collapsed. As a consequence, many businesses shut down and laborers lost their jobs and eventually face severe poverty and food insecurity. Due to job losses and other economic shock and decreased livelihoods, the worldwide effect of the coronavirus pandemic (COVID-19) is growing every day on the needy[46].

2.4.1 Covid-19 Impact on waste generation:

The quality and amount of waste produced, particularly MSW and medical wastes have significantly impacted by the COVID-19 pandemic. Due to the government lock-down, the sources and amount of solid waste production are subject to adjustments[47]. The quantity of buying and purchases of certain products, including canned food and meat, has reduced, influencing the quality and amount of waste. This change is linked to a reduction in waste production or to the worry that every day during lock-up the rubbish may be emptied[48]. During COVID-19 pandemic, the amount of household waste reached nationwide at about 20.00 percent over normal levels, although domestic waste disposal systems temporarily decreased owing to restricted mobility and fear of infection amongst residents[49]. During the shutdown time, most foodstuffs across the globe were temporarily shuttered, thus reducing the production of trash[47].

On the contrary, medical waste has risen substantially in contrast to overusing PPEs (e.g. masks and gloves) and other plastic items (e.g. spray bottles and disinfectant's) during a pandemic[50]. For the COVID-19 response each month, a prior survey has predicted that around 129 billion facemasks are needed including face shield (Poly Propylene (PP)), vinyl gloves, disposable bags, pipes, masks [47] . Because of Covid-19 pandemic, medical waste has developed strictly into many types, such as non-hazardous, pathologic, radiative, chemical, cytotoxic, sparse and pharmaceutical waste[51].

2.4.2 Impact on informal labor and waste collector:

The waste management industry in underdeveloped nations relies on informal workers—typically the poorest of society and the most vulnerable who live from commodities collection and sale to waste aggregators. COVID-19 resulted to widespread unemployment, which reduced expenditure capacity[52]. The pandemic is significantly decreasing wage jobs and mainly impacted informal laborers. Among individuals who were originally active in the informal economy, unemployment was greater after COVID. COVID-19 has affected daily wage employees' lives and therefore has had a detrimental effect on families' economic circumstances that depend on daily wage earnings. Since the beginning of the pandemic, the family economic position of the informal workers was worse. In Asia and the Pacific, informal laborers lost an average 22 percent of their earnings during the first month of the pandemic[53].

2.4.3 Covid-19 Impact on child waste collector and child waste picker:

Global child labor in the last 20 years has decreased steadily, however, according to the International Labor Organization (ILO), COVID-19 threatens to reverse this trend [54]. Due to the pandemic of COVID-19 this year, 60 million people are anticipated to slip into poverty, which will undoubtedly lead families to send children to work[54]. In Bangladesh, the informal non-regulated industry has grown more competitive in the COVID-19 pandemic period, with factory owners as cheap labor targeting minors. Children frequently labor long days for little or no compensation in the informal leather industry.

Chapter 3. Methodology of the Study:

3.1 Research design

This study adopted an exploratory sequential mixed-methods research design to documents the demographic characteristics of children and track the pathways in getting involved in the WM sector and their knowledge, practices in collecting & sorting waste, and determine the associated health sufferings. A mixed-methods design provides better flexibility to the researchers to collect data using both qualitative and quantitative approaches, analyze data using the two approaches, allow data triangulation, and finally draw a comprehensive conclusion based on the research findings. For sensitive issues like child labor, exploratory sequential mixed methods are very useful. In the exploratory design, qualitative data is first collected and analyzed, and themes are used to drive the development of a quantitative instrument to further explore the research problem[55, 56].

3.2 Study Area:

Dhaka is the capital of Bangladesh. It is referred to as a “megacity” as more than 10 million people live here. To ensure basic services for this huge population, two city corporations have been formed here, Dhaka North City Corporation (DNCC) and Dhaka South City Corporation (DSCC). The study area for this study is comprised of both city corporation areas, which is situated between 23040’ N to 23054’ N and 90020’ E to 90031’ E coordinates.

The latest census of Bangladesh was conducted in 2011 when the total population of Dhaka was 1,20,43,977[57]. Among them, 77.36% of people lived in an urban area. As of 2020, the total population of Dhaka is 21,741,000 whereas people live in city corporation area is 1,81,00,000 (DSCC 12000000 and DNCC 6100000) (Source: DSCC website & DNCC waste report 2019-2020). Dhaka district has an area of 1463.60 square kilometers while the city corporation area consists of 305.47 square kilometers (DSCC 109.25 sq. km, DNCC 196.22 sq. km).

To facilitate waste management services in the city, landfills and Secondary Transfer Stations (STS) have been built by city corporations. Secondary Transfer Station (STS) is also known as Waste Transfer Station. It is a facility that stores waste for a short period of time. It serves as the link between a community’s solid waste collection program and a final waste disposal facility[58]. STSs consolidate waste from primary collection vehicles and transfer it to disposal sites via larger transfer vehicles.

Primarily collected waste is kept in STSs only for a few hours before moving them to landfills, waste-to-energy plants, or composting facilities.

In Bangladesh, the construction of STSs for waste management was introduced in 2013 by the ADB (Asian Development Bank) under the Local Government (City Corporation) Act, 2009. It was planned to fulfill the responsibility of the City Corporations for the collection, transportation, and disposal of municipal solid wastes. Municipal solid waste is collected in these STSs via paddle vans, trolleys, etc. for onward transportation to the landfill sites of the City Corporations outside the city. Collected waste is gathered in the STSs for a few hours before being moved out. In the meantime, waste collectors sort waste for recyclable materials informally. Primary collection is incorporated with private organizations, companies, and individuals where they employ waste collectors (both adults and child workers). In many cases, adult employees bring their children to help them at work. Thus, children easily get involved in waste management works.

In addition to these waste management facilities, there are some recycling zones in the city where recyclable products are sorted out, processed, and used for making different types of products. These recyclable products are collected from various sources, from households, businesses, and from STSs and landfills, where waste pickers and scavengers collect recyclable products from waste.

This recycling starts from collecting recyclable products to processing and ends in factories making new products. Shops to buy and sell these recyclable products are found all over the city. But what the recycling zones generally offer is along with these types of shops, here processing of recyclable products and producing new ones is also performed. Among several recycling zones in Dhaka, Islambagh beside Buriganga river and Kalshi in Mirpur are significant.

3.3 Study population

The study population consisted of children involved in waste collection, sorting & separation of substances and materials from the waste bulks around dumpsite and in the STSs. Thus, waste collector, recycler, waste pickers, Waste transport workers, etc. who worked in STSs & open dumpsites of Dhaka city are considered as the study population. This study focused solely on people involved in solid waste management. Employer/recruiter of waste collector, relevant stakeholders, STS in charge were also interviewed.

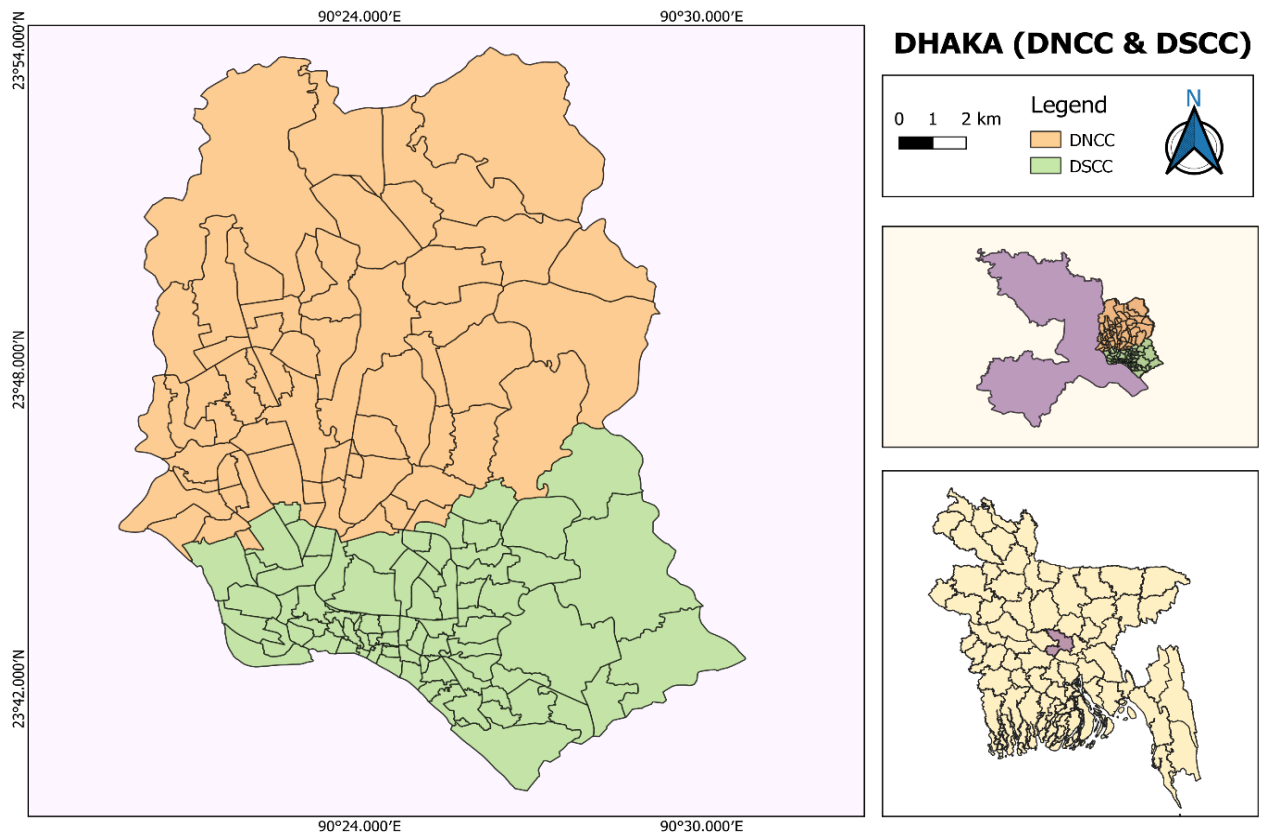


Figure 1 Study area (Map 1)

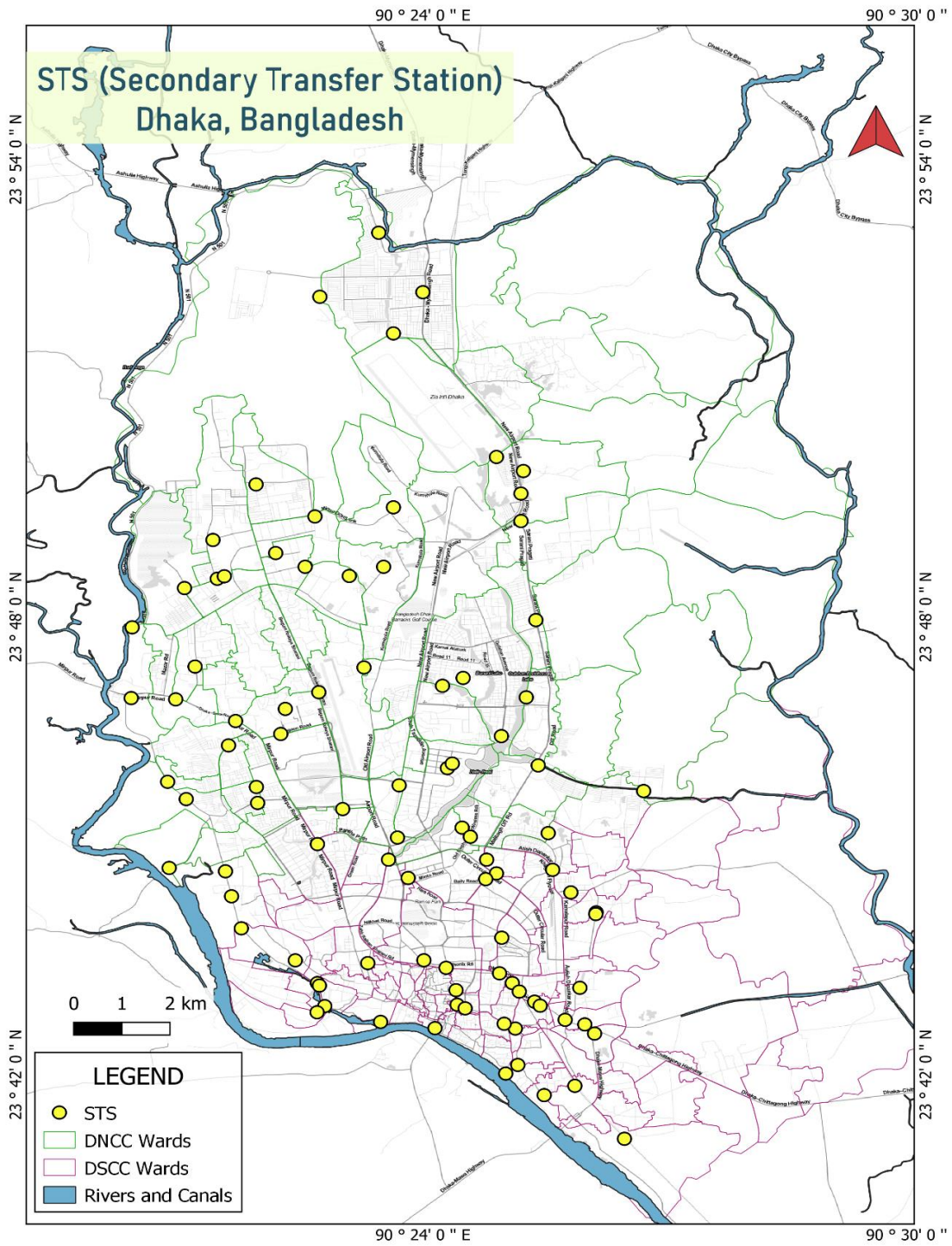


Figure 2 STSs location in study area (Map 2)

3.4 Selection criteria

3.4.1 Inclusion criteria

Children aged 5-17 years old and worked in STSs & dumpsites and who consented were included in this study. For the KII, people who were involved in the waste management system for more than 5 years were included.

3.4.2 Exclusion criteria

Those who are not willing to participate in the study, under the age of 17 years were excluded from the study.

3.5 Sampling methods

Multistage proportionate sampling was used to select the study population from among the children involved in waste management. The sample size was determined by the Fisher et al. (1998) formula for determining sample size for a population less than 10,000.

$$n = \frac{\frac{z^2 * p * (1 - p)}{e^2}}{1 + \frac{z^2 * p * (1 - p)}{e^2 N}}$$

Where,

- n is the required sample size, expressed as the number of 5-17 years aged children
- z is the two-sided z-value at (1- α) % level of confidence, and one-sided z-value at (1- β) % power respectively
- p is the predicted or anticipated value of the indicator, expressed in the form of a proportion
- e is the margin of error to be tolerated at the (1- α) % level of confidence

For our calculation, p is assumed to be 0.5 (the number of children involved in waste management aged 5-17 years is unknown, and hence, a priori p = 0.5 gives the safest sample size since p(1-p) takes the highest value for p = 0.51) with 5% margin of error, 95% level of confidence. Thus, the calculated sample size is 346.

¹ BBS. (2012). National population and housing census 2011. Dhaka, Bangladesh. Retrieved from <http://catalog.ihsn.org/index.php/catalog/4376>

This study will follow a multi-stage cluster sampling technique to collect data from children involved in waste collection and recycling. There are almost 94 STSs in Dhaka (February 2022). Where we will consider each STS as a cluster. From a total of 94, STSs- a complete list of children involved in the waste management process was done. In the first stage of sampling, 50 STS were randomly selected from the list of all STSs for each city corporation area. These are the heterogeneous group. Children involved in waste collection and recycling will act as the primary sampling unit. In the second stage, Respondent will be selected proportionately from STSs. Details are given below:

Table 3. 1 Respondent selection from STSs

Identification Number of selected STSs	Child labor aged (5-17 years)	Population Proportion	Number of children to be surveyed from each Cluster STSs
1	17	0.01	4
2	30	0.02	7
3	60	0.04	14
5	8	0.01	2
9	10	0.01	2
10	40	0.03	10
11	110	0.08	26
12	12	0.01	3
13	14	0.01	3
14	30	0.02	7
15	1	0.00	0
17	8	0.01	2
18	22	0.02	5
19	25	0.02	6
20	60	0.04	14
21	10	0.01	2
22	35	0.02	8
26	60	0.04	14
27	4	0.00	1
29	20	0.01	5
30	30	0.02	7
31	5	0.00	1
32	25	0.02	6
35	30	0.02	7
36	60	0.04	14
38	8	0.01	2
40	15	0.01	4
41	15	0.01	4
42	60	0.04	14
43	8	0.01	2
47	60	0.04	14
49	10	0.01	2
53	35	0.02	8
54	35	0.02	8

56	15	0.01	4
61	22	0.02	5
62	10	0.01	2
64	24	0.02	6
65	12	0.01	3
70	10	0.01	2
71	10	0.01	2
72	1	0.00	0
73	15	0.01	4
75	12	0.01	3
79	20	0.01	5
80	12	0.01	3
81	10	0.01	2
82	20	0.01	5
84	15	0.01	4
85	12	0.01	3
Recycling Zone	250	0.17	60
Total child population	1442		346

3.6 Sample Selection:

As the study is focused on the most vulnerable groups, the selection of respondents will be made as follows. The selection of STSs for all groups of respondents will be made using a snowball or chain referral sampling procedure. Therefore, the study will be planned to start with one individual subject providing information, and then the chain continues with one referral from other respondents. Hence, the initial screening for the respondent will be done by discussing with the STS in charge and other influential persons at each selected cluster.

As the study participants are children, a personal interview technique will be followed to collect data after taking consent from them. Quantitative data will be analyzed using Stata. Both descriptive and multivariable analyses will be conducted incorporating appropriate sampling weights

3.7 Ethical considerations

Ethical approval for conducting this research was obtained from the Institutional Review Board (IRB) of BRAC James P Grant School of Public Health, BRAC University. Written informed consent was obtained from all the adult respondents. Since this study includes children aged below 18 years, informed consent was obtained from the parents or guardians including assent from the respondents. In the case of low literacy, verbal assent and consent was obtained. All qualitative interviews were recorded with the respondents' permission.

All qualitative data were kept confidential by being stored in secured storage units and folders with controlled access, with only Principal Investigator and two research assistants have access.

[CHAPTER 4]



Chapter 4. Demographic and Socioeconomic characteristics of survey and case study respondents

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[This chapter provides details of the demographic and socio-economic characteristics of the child waste worker respondents (referred to as waste workers from here on) who participated in the study (for both qualitative and quantitative sections)]

Key Points

- *Most of the child waste workers were male and were not continuing education.*
- *Income was higher than other sectors for child labor.*
- *Engagement of family members in the same sector was higher.*
- *Most of the children migrated to Dhaka from different parts of the country in search of employment.*
- *Most children migrated with and lived with family members.*
- *Living expenses were higher and the families had to share home facilities.*
- *The financial crisis was the main challenge in pursuing education.*

4.1 Demographic and Socioeconomic Characteristics of Quantitative Study Respondents

The demographic data collected capture age, gender, marital status, educational status, monthly average income, and respondents' parents' occupation.

Table 4.1 depicts the percentage and frequency distribution of the respondents by socio-demographic characteristics. A total of 335 participants were surveyed for the quantitative study. Most of the respondents were male (95.8%). Although they weren't of the legal age of marriage, about 10% respondents were either married, divorced, or separated. According to the ILO convention 138, which is still not ratified in Bangladesh, minimum age for working for any children should not be less than 15. And the minimum age for light work that isn't likely to harm the health and safety of a child should not be less than 12 years for developing countries. According to these, the age of the respondents has been categorized as 11 and below, 12 to 15, and 16 to 17. About 48.7% children are of age group 16 to 17, which is still legal according to the laws of Bangladesh as working in waste management is yet not considered as hazardous. About 11.9% of respondents were of age 11 and below, which is strictly in violation with all the associated laws.

Table 4. 1 Demographic and Socioeconomic characteristics of Respondents

Socio-demographic Characteristics		Frequency (n = 335)	Percentage %
Age	<i>11 and below</i>	40	11.94
	<i>12 to 15</i>	132	39.4
	<i>16 to 17</i>	163	48.66
Gender	<i>Male</i>	321	95.82
	<i>Female</i>	13	3.88
	<i>Prefer not to say</i>	1	0.3
Marital Status	<i>Unmarried</i>	301	89.85
	<i>Ever Married^a</i>	34	10.15
Educational status^b	<i>No Education</i>	86	25.67
	<i>Pre-school</i>	4	1.19
	<i>Up to Primary</i>	173	51.64
	<i>Up to Secondary</i>	37	11.04
	<i>SSC/Equivalent (Passed)</i>	2	0.6
	<i>Currently Studying</i>	33	9.85
Monthly Income of respondents (BDT)	<i>Less than 3000</i>	18	5.37
	<i>3000-5000</i>	47	14.03
	<i>5000-10000</i>	122	36.42
	<i>10000-20000</i>	102	30.45
	<i>20000 and above</i>	37	11.04
	<i>Unpaid Labor</i>	9	2.69
Average Monthly Income (BDT)		11442	

Average Family Members (Person)		4.94	
Earning Members in Family	1	38	11.34
	2	130	38.81
	3	122	36.42
	4	32	9.55
	5	12	3.58
	6	1	0.3
Father's Occupation	<i>Agriculture; forestry and fishing</i>	30	8.96
	<i>Waste Management</i>	109	32.54
	<i>Transportation and storage</i>	53	15.82
	<i>Father died</i>	44	13.13
	<i>Not working/works at own home</i>	30	8.96
	<i>Manufacturing</i>	26	7.76
	<i>Construction</i>	23	6.87
	<i>Accommodation and food service activities</i>	7	2.09
	<i>Don't know</i>	4	1.19
	<i>Service holder</i>	4	1.19
	<i>Day labor</i>	3	0.9
	<i>Water supply; sewerage, and remediation activities</i>	1	0.3
Mother's Occupation	<i>Immigrant worker</i>	1	0.3
	<i>Agriculture; forestry and fishing</i>	5	1.49
	<i>Not working/works at own home</i>	166	49.55
	<i>Accommodation and food service activities</i>	60	17.91
	<i>Waste Management</i>	44	13.13
	<i>Mother died</i>	31	9.25
	<i>Manufacturing</i>	13	3.88
	<i>Construction</i>	6	1.79
	<i>Service holder</i>	4	1.19
	<i>Immigrant worker</i>	3	0.9
<i>Transportation and storage</i>	2	0.6	
	<i>Don't know</i>	1	0.3

^a Ever married category represent the respondent who are married now /widowed/separated

^b educational status of respondent refers to highest educational attainment of respondent- Pre-school category is defined as those who completed studied below class 1; Up to Primary is specified as studying within grade 1 to grade 5; Up to secondary refers to studying within grade 6 to grade 10.

In the case of educational attainment, 25.7% of respondents did not attend any form of formal education. About 51.6% of the respondents studied up to primary level while 11.0% of the respondents studied up to secondary level. Only 9.9% of the respondents were continuing studying.

The average monthly income of the respondents was 11442 BDT. It was much higher than the monthly average income (3304 BDT) reported in one of the study in Bangladesh [59]. Only 5.4% respondents had monthly income less than 3000 BDT. About 11.0% had a high monthly income of 20000 BDT and above. On the other hand, 2.7% respondents who worked as unpaid laborers, mainly helped their parents, family members, and friends. The average number of family members of the respondents was 4.94.

In the case of the respondent's parents, approximately 13.1% of respondents lost their father and 9.3% lost their mother. When it comes to the occupations of respondents' parents, 32.5% of respondents' fathers work in the waste management sector. 15.8% worked in the transportation and storage sector, 9% worked in agriculture, forestry, and fishing, and 9% did not work. On the contrary, most of the respondents' mothers worked at their own home (49.6%) while 13.1% of respondents' mothers worked in the waste management sector. In mother's case, 17.9% worked at accommodation and food service activities, 3.9% at manufacturing. While 4 of the respondents' parents were service holders.

According to the figure 3, almost 83.3% of the respondents worked at STSs across the city. About 12.2% of the respondents worked in recycling zones and recycling industries. Other respondents were from Matuail Landfill site and from some open dumps within the city corporation areas.

In response to children's workplace, figure 4 represents the one of the landfills, figure- 5 represents the common picture of secondary transfer station in Dhaka city, and figure 6 represents one of the recycling zones.

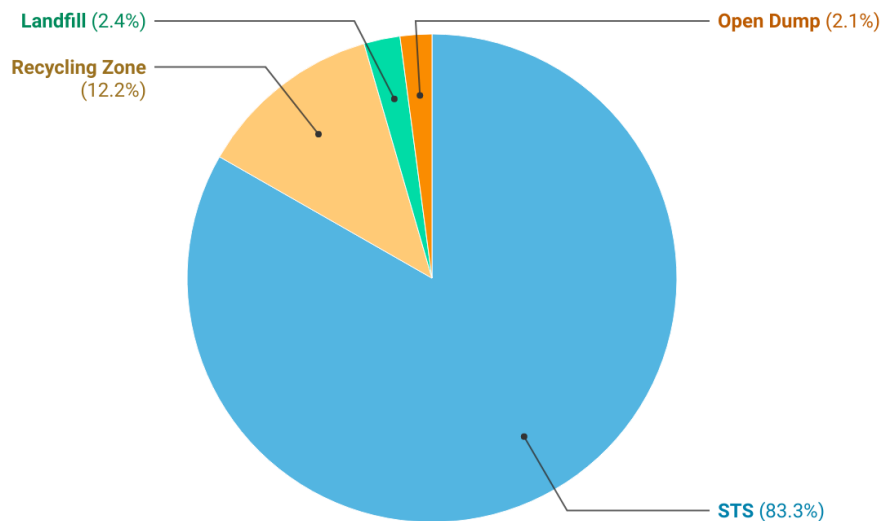


Figure 3 Working area of child waste workers.



Figure 6 Matuail Landfill



Figure 5 Secondary Transfer Station (STS) at Kawran Bazar



Figure 4 Kamrangir Char Recycling Zone

4.1.1 Household characteristics of the respondents:

This study also considers the household characteristics of the respondents including ownership of the household, availability of electricity, water supply, kitchen, or toilet facility, and whether they must share it with others or not. This information will help us to understand and analyze the survey results.

About 92.5% of respondents lived in rented houses and only 1.5% had their own house. There were rent free, and employer provided residence for the working children. Floating populations were also involved in the waste management sector, although they were more likely to get involved in rag picking.

Table 4. 2 Household characteristics of the respondents

Household Characteristics		Frequency (n = 335)	Percentage (%)
Household Ownership	<i>Rented house/land</i>	310	92.54
	<i>Own house</i>	5	1.49
	<i>Rent free</i>	13	3.88
	<i>Employer provided</i>	4	1.19
	<i>Floating</i>	1	0.3
	<i>Don't know</i>	2	0.6
Monthly House Rent (BDT)	<i>Less than 3000</i>	86	27.74
	<i>3000 to 5000</i>	147	47.42
	<i>5000 to 10000</i>	58	18.71
	<i>10000 to 15000</i>	5	1.61
	<i>15000 to 18000</i>	2	0.65
	<i>Don't know</i>	12	3.87
Availability & Sharing in Household (Multiple Responses)	<i>Kitchen Sharing</i>	248	74.03
	<i>Washroom Sharing</i>	225	67.16
	<i>Toilet Sharing</i>	237	70.75
	<i>Electricity Sharing</i>	204	60.90
	<i>No Sharing</i>	74	22.09
Currently Living (Multiple Responses)	<i>With Parents</i>	225	67.16
	<i>Parents and joint family with siblings</i>	27	8.06
	<i>with friends</i>	119	35.52
	<i>Only with mother</i>	15	4.48
	<i>Only with father</i>	19	5.67
	<i>Alone/on my own</i>	2	0.6
	<i>With work partner</i>	5	1.49
	<i>Under the management of employer</i>	3	0.9
	<i>With spouse</i>	13	3.88
	<i>With relatives</i>	6	1.79
Monthly Income of family (BDT)	<i>Up to 10000</i>	14	4.18
	<i>10000 to 20000</i>	33	9.85
	<i>20000 to 50000</i>	105	31.34
	<i>More than 50000</i>	178	53.13
		19	5.67

The respondents' average monthly house rent was 4485 BDT per month. Most of the respondents (47.4%) had to pay a monthly rent of 3000 to 5000 BDT. The rent was not only paid by the children themselves but was paid by the parents/guardians where the children were living with them. In contrast, there were some respondent's families who paid more than 15000 BDT per month in rent. Because the respondents were children, many (3.9%) had no idea how much rent their family had to pay.

Despite living in rented houses, about 77.9% of respondents had to share home facilities with others. Kitchen and toilet sharing (74.0% and 70.8% respectively) were more prevalent.

There was a variety of answers for with whom the children were then living. About 67.2% of respondents lived with their parents, and 35.5% lived with their siblings. About 8.1% lived in joint families. Other responses included living alone, with relatives, and living under the management of employers.

In the case of family income, it varies a lot i.e., nearly 9.9% of families had a monthly income of less than 10,000 BDT, while 5.7% had a monthly income of more than 50000 BDT, which was a fair bit in terms of local socio-economic conditions. More than half of the families had income between 20000 to 50000 BDT (53.1%).

4.1.2 Current Educational Status of Respondents:

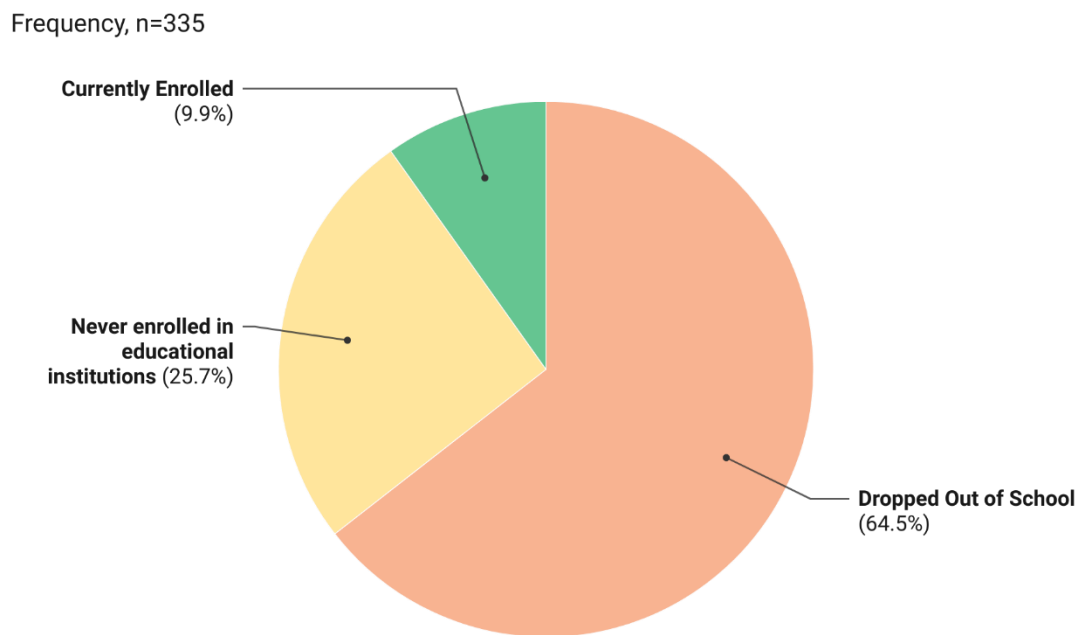


Figure 7 Enrollment in educational institutions

In the case of current educational enrollment, only 9.9% of children were enrolled in educational institutions. These educational institutions included general schools and religious educational institutions (Madrasa). Among currently enrolled students, one-third (66.7%) were in primary schools and 27.3% were in secondary schools.

This study seeks to understand the reasons for never enrolling in any educational institution and discovered that financial difficulties were the primary cause for most respondents. About 45.4% respondents reported that they could not afford schooling, 34.9% reported they needed to support their family financially, and 15.1% reported they needed to work full time. Apart from this, 36.1% of children said that they weren't interested in school. Somehow, they weren't convinced that education was important. The same thing goes for some families where they did not allow the children to go to school (16.3%) or the families where education was not considered valuable (26.7%). Among other reasons, parents were unable to work (5.8%), helping family members at work as unpaid workers (9.3%), and learning a skill for job/work (9.3%) were mentioned.

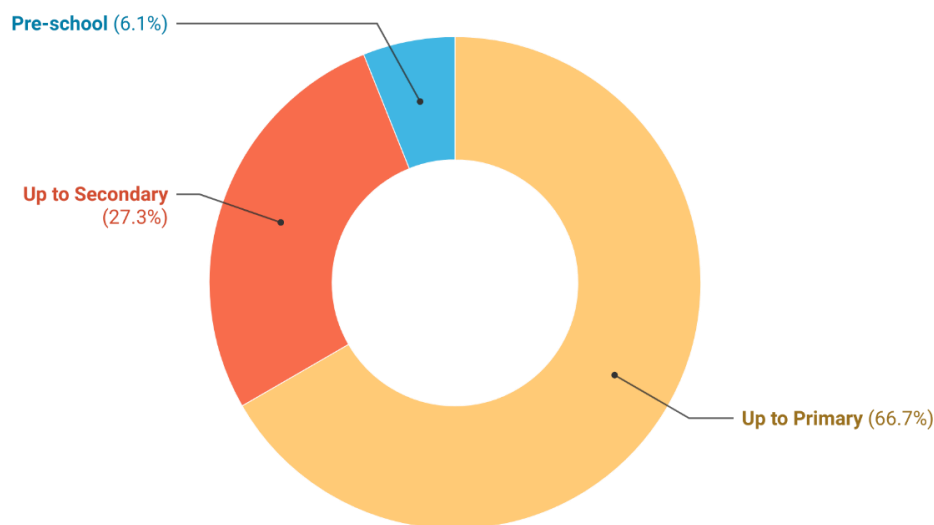


Figure 8 Current enrollment status

Frequency, n=86

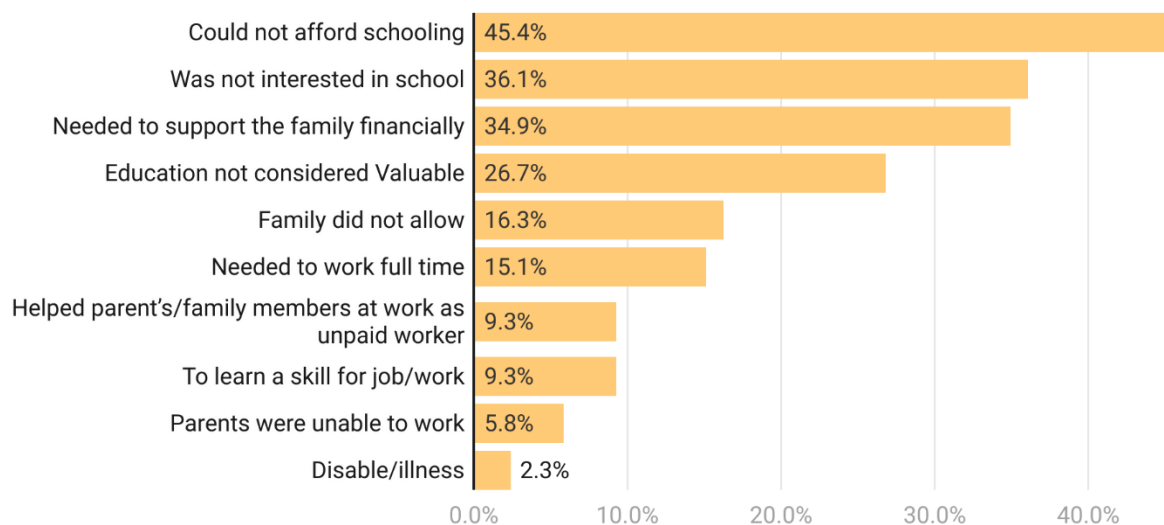


Figure 9 Reason behind not enrolling in any educational institution.

4.2: Demographic and Socioeconomic Characteristics of Qualitative Study Respondents

Among the 17 IDI respondents, 15 are male and two females. The female respondents are married, while all the male respondents are single. Most of the respondents (63.64 %) are aged 12 and higher. The IDIs were conducted in a random sampling method where the respondents were selected randomly from different workplaces. 9 of the 17 respondents were waste collectors, 4 were waste recyclers, and 4 were waste vehicle helpers.

Table 4. 3 Sociodemographic profile of IDI respondents

	Variable	Number	Percentage
Age Range	<i>11 and lower</i>	2	18.18
	<i>12 - 15</i>	5	45.45
	<i>16 - 18</i>	4	36.36
Gender	<i>Male</i>	15	88.24
	<i>Female</i>	2	11.76
Marital Status	<i>Married</i>	2	11.76
	<i>Single</i>	15	88.24
Education	<i>No formal education</i>	2	11.76
	<i>Primary school incomplete*</i>	8	47.06
	<i>Primary school completed</i>	4	23.53
	<i>Secondary school**</i>	3	17.65
Type of worker	<i>Waste Collector</i>	9	52.94
	<i>Waste Recycler</i>	4	23.53
	<i>Waste vehicle helper</i>	4	23.53
Income***	<i>No fixed earning</i>	2	11.76
	<i>4000-6000 Taka</i>	3	17.65
	<i>6000-9000 Taka</i>	7	41.18
	<i>More than 9000 Taka</i>	5	29.41

*Primary school refers to education till class 5

**Secondary school refers to education till class 8

*** (Labour income includes the wages of employees and part of the income of the self-employed. Self-employed workers earn from both their work and capital ownership. - ILO. Here, wages, profits from selling recyclable items, overtime bonus, and all the payments and benefits in cash is considered)

Only 1 of the 17 respondents continues their education, while others are school dropouts or have never attended school. Here, school dropout refers to the children who previously went to school for study but are not continuing now. 8 respondents dropped schools below primary level (class 5), 4 dropped after completing primary school, and 3 continued till secondary school (class 8). 2 respondents never received formal education. There are several reasons for school dropouts, which are explored in the following chapter of the study.

Interestingly, the study found several special children (physically or mentally challenged) involved in waste management. One of the respondents of IDIs is mentally challenged and is introduced to work by their family.

The income of informal child laborers depends on multiple criteria and varies widely. Their wages are determined by their age, area of work, involvement period in the work etc. and is fixed by the employers. Two of the 17 respondents didn't have fixed incomes and were dependent on family members. They mainly helped their family members, and thus they had no fixed income.

Those who were paid used to get between 4000 to 11000 taka per month, and some earned even more from selling recyclable products and overtime working. 12 out of 17 respondents earned more than 6000 taka per month. It's deficient and they must struggle hard to maintain themselves and their families with such low income.

Table 4. 4 Sociodemographic profile of KII respondents

Variable		Number	Percentage
Gender	<i>Male</i>	7	100
	<i>Waste Collector</i>	3	42.86
Occupation	<i>Waste Recycler</i>	1	14.29
	<i>Employer</i>	3	42.86

7 KII has been conducted for the study where all the respondents were male. The respondents were selected randomly from different worksites. 3 of the respondents were waste collectors, 3 were employers, including supervisors and van owners, and 1 was a waste recycler.

FGD Respondents

3 FGDs have been conducted through 2 different groups of people. 2 FGDs were conducted with children involved in waste management and 1 with waste recycling employers. There were 9 respondents in FGD-1, 6 respondents in FGD-2, who were all children. FGD-3 was conducted with 6 employees, who were all adults.

[CHAPTER 5]

Photo ©JPGSPH



Chapter 5: Findings of the study

Key Points

- *Family members' involvement is a major driving factor*
- *Financial crisis urges for early employment*
- *Limited employment opportunity in home district*
- *One earning member in family can't earn enough for the whole family*
- *Income is relatively high for child waste workers*
- *No training/experience/exam required*
- *Jobs are available for newcomers*
- *Easy access to job*
- *No age restriction*
- *Relatively relaxed work schedule than other jobs*

5.1 Pathways to getting involved in waste management sector

There are strings of reasons that contribute to the involvement of children in the waste management sector. The push factors and pull factors that are responsible for making a pathway for children to getting involved in waste management is discussed in this section.

5.1.1 Factors behind choosing the waste management sectors:

Table 5.1 shows the reason behind involving the waste management sectors of child waste workers. For younger children, the main reasons behind choosing the job were to contribute to family for family crisis. Also, this work was the only thing they had found in the first place (35%). 12 to 15 years old children were more likely to choose the job for the same reasons, along with the reason that this work was easily accessible and available for them. The older children, however, had another prominent reason, to manage self-expenditure (38.04%). Another interesting finding is that, although in a very low frequency, older children, who had more experience and were involved in other jobs, tend to switch to this work because of their high income.

Table 5. 1 Reason behind choosing this job (% indicates column percentage)

Why chose this job. (Multiple answers)	11 years old and below	12 to 15 years old	16 to 17 years old	Total
<i>Due to family crisis</i>	15 (37.5%)	71 (53.79%)	108 (66.26%)	194 (57.91%)
<i>Due to hunger</i>	5 (12.5%)	13 (9.85%)	13 (7.98%)	31 (9.25%)
<i>To manage self-expenditure</i>	9 (22.5%)	32 (24.24%)	62 (38.04%)	103 (30.75%)
<i>To contribute to family</i>	28 (70%)	101 (76.52%)	118 (72.39%)	247 (73.73%)
<i>To get study expenses</i>	1 (2.5%)	3 (2.27%)	3 (1.84%)	7 (2.09%)
<i>For savings</i>	1 (2.5%)	-	2 (1.23%)	3 (0.9%)
<i>Easily accessible</i>	7 (17.5%)	36 (27.27%)	36 (22.09%)	79 (23.58%)
<i>This is what was available</i>	14 (35%)	36 (27.27%)	45 (27.61%)	95 (28.36%)
<i>Lost previous job due to COVID-19</i>	-	1 (0.76%)	3 (1.84%)	4 (1.19%)
<i>Due to high salary comparing to previous job</i>	1 (2.5%)	7 (5.3%)	9 (5.52%)	17 (5.07%)
<i>Family business</i>	2 (5%)	6 (4.55%)	3 (1.84%)	11 (3.28%)
<i>Due to Pandemic</i>	-	1 (0.76%)	1 (0.61%)	2 (0.6%)

Pearson $\chi^2 = 151.3170$ ($p = 0.146$)

Qualitative data also explores that to a large extent, poverty is a driving element for children to become involved in waste management activities. To fulfill their basic needs, the children's families felt that they had to work. According to a response from one of the participants,

"As the eldest son, I am responsible for caring for my ailing father, who is also addicted to marijuana and hence unable to work."

- 15 years old, waste collector, Khamarbari, Dhaka.

As long as they are involved in waste management, children are at risk of being exploited in their daily lives. The COVID-19 pandemic has reactivated the vulnerability. Their fundamental needs have left them little choice but to become involved in waste management. In another region, a waste collector child explains his engagement in waste management. As he stated,

"I have been unable to fulfill my hunger because of the crisis, my father and mother are both unwell, my school was closed for 2-3 months due to COVID-19, so I started to look for a job, and I arrived here." In the years after then, I have been working here and have not gone back."

- 16 years old, Waste collector and recycler, Matuail, Dhaka.

For children to become involved in waste management, poverty plays a terrible trick on them. It has been established that poverty is the first and most efficient cause for children in Dhaka to get involved in waste management. Occasionally, children assume a role in their financial well-being. In addition, family members often encourage their children to acquire jobs because of their financial hardships. Since it is so simple to get involved in garbage management and requires no training or expertise, kids are becoming more involved.

Respondents from all the divisions choose their job due to family crisis and to contribute to family income. There was variation in later responses. More children from Dhaka, Rangpur, and Sylhet reported that this was available for them than other areas where more children from Rajshahi and Mymensingh reported they chose this job to manage their self-expenditure.

Table 5. 2 Division wise reason for choosing the job

Reason for choosing this job	Barisal	Chittagong	Dhaka	Khulna	Mymensingh	Rajshahi	Rangpur	Sylhet	Total
<i>Due to family crisis</i>	23 (50%)	10 (43.48%)	52 (65%)	4 (80%)	16 (59.26%)	5 (55.56%)	22 (70.97%)	25 (71.43%)	157 (61.33%)
<i>Due to hunger</i>	4 (8.7%)	2 (8.7%)	11 (13.75%)	-	1 (3.7%)	-	3 (9.68%)	3 (8.57%)	24 (9.38%)
<i>To manage self-expenditure</i>	17 (36.96%)	8 (34.78%)	21 (26.25%)	1 (20%)	9 (33.33%)	6 (66.67%)	10 (32.26%)	5 (14.29%)	77 (30.08%)
<i>To contribute to family</i>	29 (63.04%)	16 (69.57%)	62 (77.5%)	5 (100%)	20 (74.07%)	5 (55.56%)	22 (70.97%)	26 (74.29%)	185 (72.27%)
<i>To get study expenses</i>	1 (2.17%)	-	-	1 (20%)	1 (3.7%)	-	1 (3.23%)	-	4 (1.56%)
<i>For savings</i>	-	-	1 (1.25%)	-	-	-	1 (3.23%)	-	2 (0.78%)
<i>Easily accessible</i>	12 (26.09%)	5 (21.74%)	17 (21.25%)	1 (20%)	6 (22.22%)	5 (55.56%)	5 (16.13%)	7 (20%)	58 (22.66%)
<i>This is what was available for me</i>	8 (17.39%)	8 (34.78%)	22 (27.5%)	1 (20%)	8 (29.63%)	5 (55.56%)	11 (35.48%)	13 (37.14%)	76 (29.69%)
<i>Lost previous job due to COVID-19</i>	1 (2.17%)	-	1 (1.25%)	-	-	1 (11.11%)	-	1 (2.86%)	4 (1.56%)
<i>High salary comparing to previous job</i>	4 (8.7%)	2 (8.7%)	4 (5%)	-	3 (11.11%)	-	1 (3.23%)	1 (2.86%)	15 (5.86%)
<i>Family business</i>	2 (4.35%)	-	2 (2.5%)	-	-	-	-	1 (2.86%)	5 (1.95%)

Qualitative findings also show that, family crisis such as death of parents and self-responsibility etc. In the case of the death of a parent or principal contributor in the household, the kid is particularly exposed

to waste management concerns. As a result of their parents' deaths, their children now have the financial burden of supporting their families. According to the evidence of one of the workers in the child dumping ground,

"I am not attending school because my father died; as the family's eldest son, I am responsible for supporting my family; I wish I could attend school, but I am required to work and earn for my family."

- 17 years old, Waste truck helper, Notun Bazar, Dhaka.

There are also those children who believe that they must give to their families and the desire to eliminate their families' financial hardships. Because they don't want their parents to suffer, they have a form that encourages them to seek a job as quickly as feasible. In the words of one of the garbage collectors,

"If you are the family's oldest son, you must do your share of the household chores. I don't want to be a burden to my parents."

- 15 years old, Bishawroad, Dhaka

Another important reason explored by qualitative findings is that nominal wages are available to the waste management authority's employer to recruit children. In addition, there is no need for any special training to become a garbage collector or recycler. As a result, leading waste management agencies prefer to hire people with less experience because of their youthful demographic. According to a supervisor in charge of a secondary transfer station (STS), waste management positions are plentiful. As he put it,

"As I indicated before, the employer may hire the children for a low salary. And it doesn't cost anything to work here; it doesn't need any experience. It is easy to acquire a job, and as easily they are making money from here, children won't be able to do so anywhere else..."

- 48 years old, recruiter of waste collector, Banani, Dhaka.

If a waste collector employer can recruit children, his firm will be substantially more profitable. It has been discovered that recyclable garbage collected by a waste collector may be sold, but his work requires him to hand over the recyclable waste to his employer.

5.1.2 Family member's involvement:

It is very common for children who work in an informal labor sector like waste management, their family members, parents, relatives, and community members before they become involved in waste management. About 57.8% of respondents mentioned that their family members were involved in the waste management sector. According to the collected data, male members of the family, father and brothers were engaged more than female members. Hence, family member's involvement in waste management sector can be identified as one of the pull factors that contribute to the engagement of children to the sector.

Table 5. 3 Family member's involvement in waste management

Involved in Waste Management	Frequency (%)
<i>Father</i>	127 (37.91%)
<i>Mother</i>	39 (11.64%)
<i>Brother/sister</i>	73 (21.79%)
<i>Uncle /aunt</i>	10 (2.99%)
<i>Husband / wife</i>	6 (1.79%)
<i>Relative</i>	4 (1.19%)
<i>Grand parents</i>	1 (0.3%)
<i>Only the respondent</i>	142 (42.39%)

Findings from the qualitative study also shows that the children of waste collectors are working in waste management, whether or not their families are aware of it. In response to the question, "Why are you working here?" Then, one of the responders stated,

"This is what my grandpa did for 27 years, and I learned it from him. My friends and family are used to it, so I'm doing it."

- 14 years old, waste collector, Khamarbari, Dhaka.

When a family feels the need to start earning money, parents and children alike begin looking for employment and making recommendations to friends and neighbors. They acquire a job with the aid of family and friends in the community. A child's chances of obtaining a job in waste management are strongly impacted by their parents' and family members' engagement in the profession. One of the child waste workers stated that-

"In the past, my brother-in-law worked as a site manager (sum of certain households). He abruptly said he was leaving the company and advised that I put things on hold. When my parents decided to relocate to Dhaka, I told them about my business plan. They accepted, and I've been working on it ever since."

- 17 years old, waste collector and site manager, khilkhet, Dhaka

Consequently, a child might easily acquire a job in waste management to make money quickly. A parent's recommendation that their kid's economic contribution to the family can lead to the child becoming involved in waste management. Numerous children were discovered to be active in this field due to their peers' engagement. They grew interested in working with their pals after they arrived to help them or visit their friends' workplaces.

5.1.3 Migration:

This study found that about 76.4% of the respondents migrated to Dhaka. This indicates that migration also plays an important role in involving the waste management sector. Findings show that 23.9% respondents migrated from Dhaka division alone. There were 13.7% migrants from Barisal, 10.5% migrants from Sylhet, 9.3% migrants from Rangpur, and 8.0% migrants from Mymensingh division. There were very few respondents who migrated from Khulna and Rajshahi divisions.

Table 5. 4 Distribution of migration from (Division)

Division	Frequency	Percentage
<i>Barisal</i>	46	13.73
<i>Chittagong</i>	23	6.87
<i>Dhaka</i>	80	23.88
<i>Khulna</i>	5	1.49
<i>Mymensingh</i>	27	8.06
<i>Rajshahi</i>	9	2.69
<i>Rangpur</i>	31	9.25
<i>Sylhet</i>	35	10.45
<i>Did not migrate</i>	79	23.58

District wise migration gives a clearer picture. Highest number of migrants came from Netrokona (9.3%), Kishoreganj (8.4%), Bhola (8.1%), Rangpur (7.8%), and Mymensingh (7.2%) districts among the 64 districts of the country. Map 3 illustrates migration pattern of the respondents towards Dhaka. There were a few children from the west and south-east part of the country.

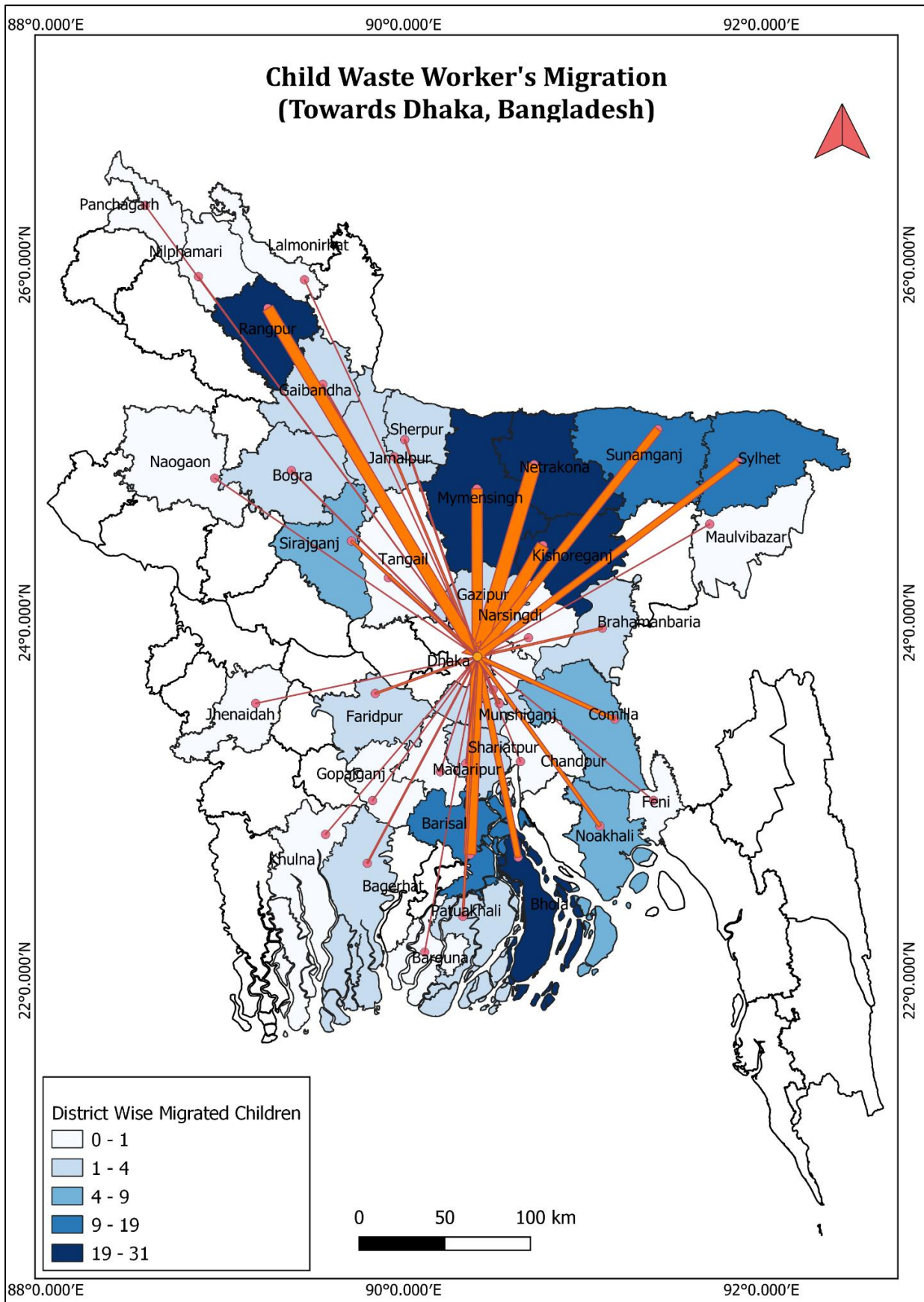


Figure 10 Child Waste workers' migration (Map-3)

Table 5. 5 Migration reason of children (% indicates column percentage)

Migration Reason	11 years old and Below (n=31)	12 to 15 years old (n=99)	16 to 17 years old (n=126)	Total
<i>Loss of parent's land/home</i>	2 (6.45%)	3 (3.03%)	6 (4.76%)	11 (4.3%)
<i>Conflict</i>	1 (3.23%)	4 (4.04%)	-	5 (1.95%)
<i>Political reason</i>	1 (3.23%)	-	-	1 (0.39%)
<i>Natural disaster</i>	-	3 (3.03%)	3 (2.38%)	6 (2.34%)
<i>In search of employment</i>	22 (70.97%)	83 (83.84%)	120 (95.24%)	225 (87.89%)
<i>Losing income opportunity</i>	3 (9.68%)	10 (10.1%)	11 (8.73%)	24 (9.38%)
<i>Had to follow parent's decision</i>	14 (45.16%)	26 (26.26%)	12 (9.52%)	52 (20.31%)
<i>Due to Pandemic</i>	1 (3.23%)	1 (1.01%)	1 (0.79%)	3 (1.17%)

Pearson $\chi^2 = 65.8127$ ($p = 0.002$)

Younger children had to follow their parents' decision mostly, with the intention of helping family financially, whereas older children had to migrate mainly in search of employment (95.24%). The number of children migrated due to COVID-19 pandemic was negligible. Other prominent causes included loss of parents' land/home and losing previous income opportunity. Younger children tend to migrate with parents and siblings, whereas older children (16-17 years old) often migrate with relatives, friends, community people, or even themselves. The causes can be explored when their causes of migration are evaluated.

5.1.4 Dropout from school/Discontinuation of school

Though in Bangladesh, the government provides formal schooling in public school for both primary and secondary schools level, the overall dropout rate was 17.9%, with girls accounting for 15.7% and boys accounting for 19.20% [60]. The COVID-19 pandemic has substantially exacerbated the issue [61]. Findings of this study also show that among the respondent who were enrolled in educational institutions, 86.8% have dropped out for various reasons. The most common reason for dropout from school was to support their family financially (55.6%). Financial problems, such as not being able to afford schooling and working full time were also prevalent (44.4% and 13.9% respectively). The reasons for not enrolling into any school and the reasons for school dropout were similar. While 12.0% of respondents report that their families do not allow them to continue their education, 13.4% mention that they must assist family members at work as unpaid laborers.

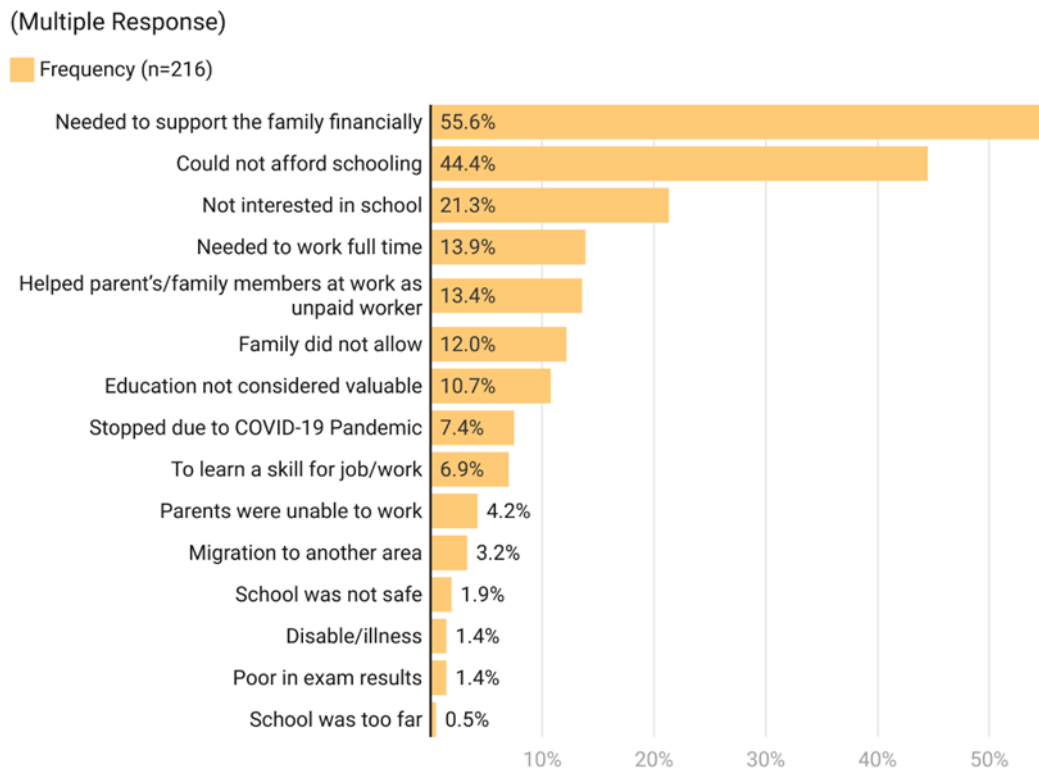


Figure 11 Reasons behind school dropout

On the other hand, 21.3% of respondents said they were no longer interested in going to school, and 10.7% thought education was not valued. But there were two more reasons that contributed to children's dropout from school. Migration to another area (3.2%), and adverse effect of COVID-19 pandemic (7.4%) also caused some children to dropout from school. Thus, children found that the waste management sector is a huge opportunity for them to get busy with waste management related works are available everywhere in Dhaka. Informally, it doesn't need any education, experience, or training to get started with. Also, no age limit, and generally no rejection to candidates made it easy for dropout children to start working in the waste management sector.

Similarly, qualitative study found that among the 17 respondents of IDI, only one child is continuing their education. Some of the children never attended school, and most left school for various reasons. One of the most common reasons for school dropouts is that the children have to support their families. This support is of different types. One of the children told:

“I Have to take care of my father’s business. He has problems in eyes; I must work for him and support my family....”

- Waste recycler, Kalshi, Dhaka

Helping family members in work is prevalent among people related to waste management. Along with the financial support, this support in work causes the children to leave school. A child waste collector who studied up to class 3 stated:

“My elder brother can’t suffer in the workplace alone; I must need to support him with his work (waste-collecting from households).”

- 11 years old, Waste collector, Notun Bazar, Dhaka

Qualitative study also explored that the COVID-19 pandemic directly increased the rate of school dropouts. Children who studied before chose to or were forced to work as they weren't studying. There was a long gap in in-person school activities during the pandemic. Lockdown was imposed in the country, and the educational institutions remained closed for the most prolonged period. While most educational institutions try to continue with online classes, the low-income families who didn't have access to necessary devices to continue school online were unable to continue education. In contrast, the families who had access to essential devices continued their education.

A respondent who was studying before the pandemic stated:

“The school was closed for many days like I left school when the Corona breakdown (COVID-19 Pandemic) happened.”

- 16 years old, Waste picker, Matuail, Dhaka

In most cases, children who drop out of school can’t continue studying as the long gaps create a social stigma that they are older and can’t start studying.

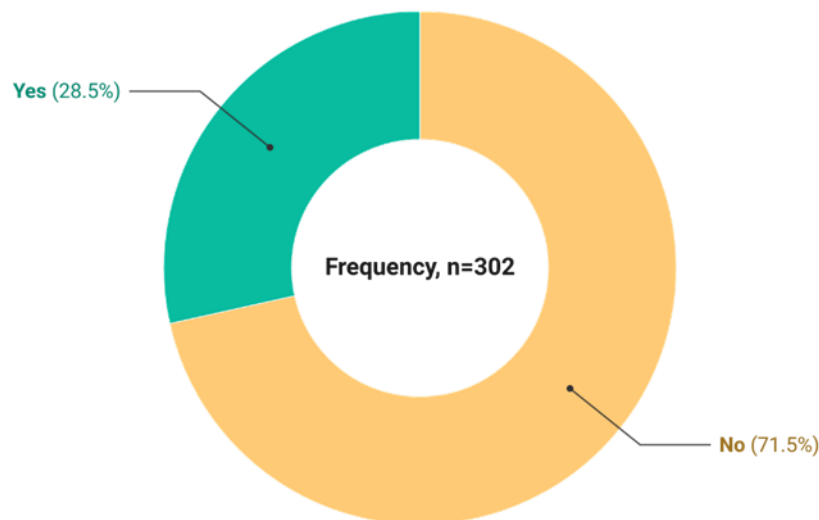


Figure 12 Willingness to restart formal education

This study also tries to explore the willingness to start formal education again and the reason behind unwillingness to start any formal education again. Though the financial crisis is the most common reason for school dropouts all over the country, child waste workers have mentioned some other reasons for their dropout including to support family members, long gap due to pandemic etc. Thus, the study found that children who dropped out from the school, 71.5% of them did not want to start formal education again. As a reason of unwillingness to start formal education again unfortunately, they simply were not interested (94.4%) in studying. About 38.4% of children responded that they fear that they won't be able to cope up due to long break in study.

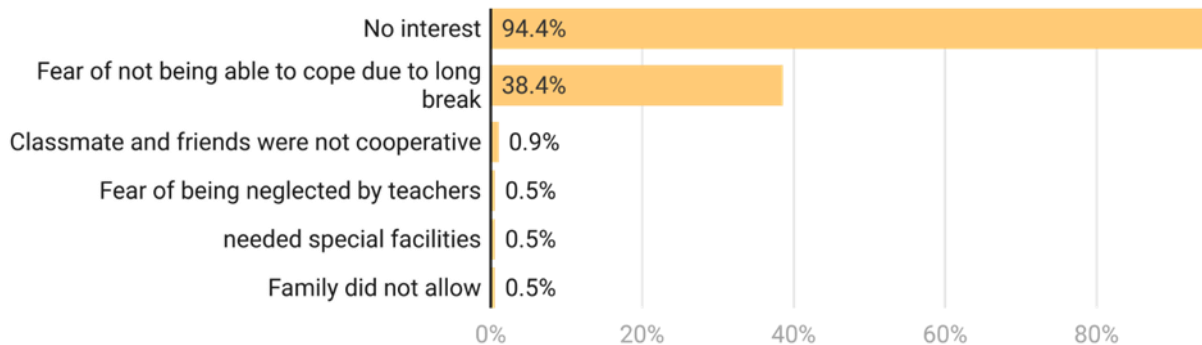


Figure 13 Reasons for not wanting to restart formal education.

Qualitative study similarly found that many children drop out of school because they are simply not interested in studying anymore. The education system or curriculum can't make them interested in school. Instead, the children choose to work from an early age.

A researcher asked a respondent if they were continuing their study, they responded negatively. When they were asked why they weren't continuing, the reply was:

"I don't like (by nodding their head)."

- 11 years old, Waste collector, Khilkhet, Dhaka

A respondent said they left school in 2013 when they were in class 3. They never attended school after, though their parents told them to study.

"Then I didn't like it anymore, and I didn't study later."

- 17 years old, Truck helper, Notun Bazar, Dhaka

The school curriculum and the children's known working environment don't match. This difference leads them to believe that education isn't necessary for earning. They lose interest in their studies.

There are more reasons why a child gets dropped out of his school. Sometimes their parents or guardians force them to stop studying. Early marriage is also responsible, as for a boy, he needs to earn to feed his family, and for a girl, she has to look after household works. A girl also has to obey her husband and husbands' family decisions. In these situations, they had to leave school.

Some children leave school for poor performances. One respondent stated that the reason for their drop out of school was:

"I left because I can't memorize what I studied; I can't remember them at all."

- 16 years old, Waste recycler, Kalshi, Dhaka

Migration is another factor that contributes to dropout from school. Some people migrate in search of work. When they start working in the waste management sector (collection, sorting waste, recycling), they need helping hands, which is costly if they want to hire someone. In this situation, they get help from their children. Also, often they can't save enough money for their child to get admitted into the school. Thus, the children can't get admitted into school in a new place.

One respondent mentioned that working is the primary focus for them. They were interested in starting to study again if they were provided with fewer working hours or fewer tuition fees. One of the respondents responded:

"I can start studying, but the work is in primary focus."

- 13 years old, Waste collector, Kalshi, Dhaka

A few other respondents also mentioned continuation school, also known as night school, is an opportunity for working people of all ages to start studying again. It has gained success in removing illiteracy from the country earlier. Some respondents stated that night school would help them to study again.

"It's not possible to go in the daytime (to school, because of work), I could go if it would have been in the night)

- 17 years old, Truck helper, Notun Bazar, Dhaka

5.2: Factors related to workplace



Key points

- *Almost no facilities*
- *Long Working hour*
- *Have to perform multiple tasks in job.*
- *Almost no use of safety equipment*

One of the most significant contributors to hazardous child labor is waste management. Children are more vulnerable, and the consequences of hazardous labor can often be more severe and long-lasting. This section discusses workplace elements such as workplace amenities, working hours, pay, workplace hazards, and so on.

5.2.1 Workplace and working hours and wages:

Among the respondents, 83.3% worked at STSs, 2.4% at Landfills, 2.1% at open dumps, and 12.2% worked at recycling shops and industries. At some places of the city, city corporations still facilitated open dumps where people of all ages work regularly. Children working in those sites were not rag pickers or street children. They were within the waste management sector, and hence were included in the study.

(Multiple Response)

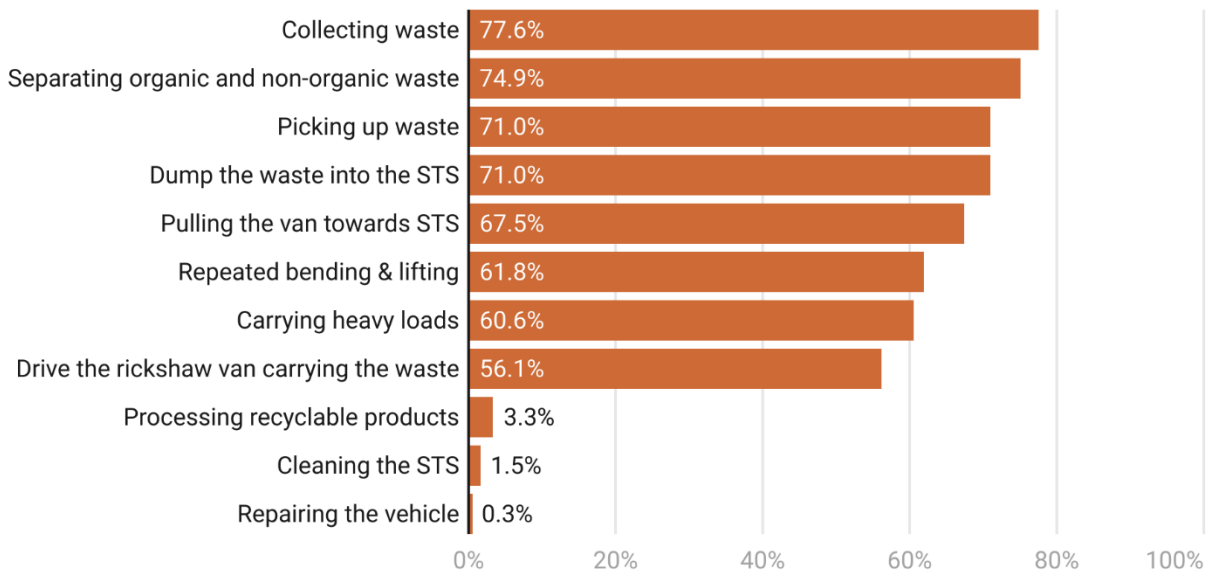


Figure 14 Types of activities performed by child waste workers.



Photo ©JPGSPH

Figure 15 A child pulling waste van as van driver

The children aged below 15 years old had almost the same type of job roles. They mainly had to work as waste recyclers and waste collectors. No children aged 11 and below worked as a driver or in cleaning STS, but some worked as van helpers (25%). About 22.5% of children in this age group had worked as helpers in different activities.

Children aged 12 to 15 years old were engaged in various activities, including van helper (30.3%), van driver (24.2%), and helper in other activities (28%). Adolescents aged 16 to 17 years were more in van driver role (58.9%) than younger children. Also, they were comparatively lower in percentage as van helpers.

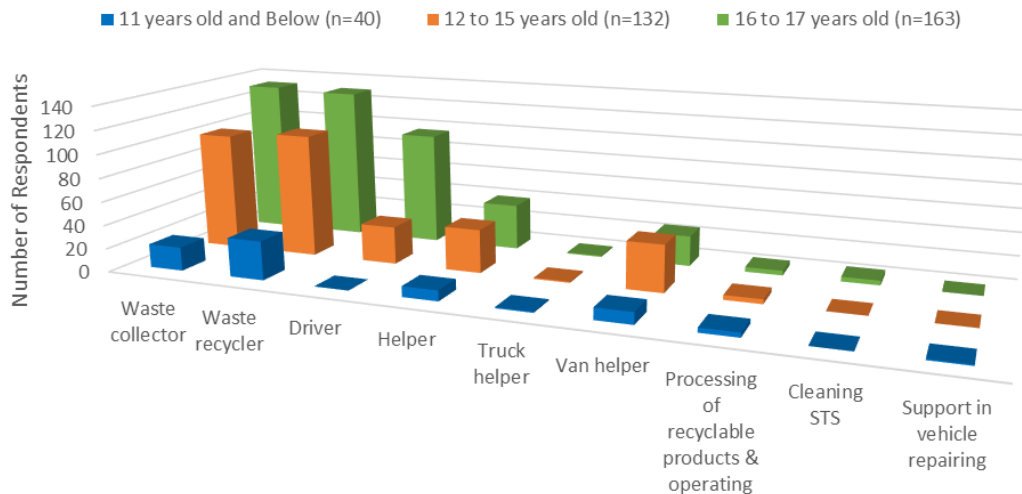


Figure 16 Age wise job role

In the case of working hours, children have to work for as many hours as they can since there is no fixed working hours for them. In an average, children had to work for 8.2 hours per day. About 29% respondents worked for 8 to 10 hours a day and 16.4% respondents worked for more than 10 hours a day. On average, the children worked for about 51.4 hours per week. Only 13.1% of children worked less than 30 hours a week, whereas about 32% children worked for more than 60 hours per week.

Some of the respondents had to work 12 hours to 16 hours in a day, which sums up to 84 to 112 hours of work per week. There were several possible causes that might explain why they had to work for this long a time. Recently, in December 2021, the waste dumping into STSs has been rescheduled due to some major incident [62]. According to the new schedule, they (City corporation's garbage truck) start their work in the late evening, so that the waste collectors must store their collected waste after (3pm to 11 pm, vary place to place). It has pushed waste collectors to wait an entire day to discharge their waste. These circumstances combined to produce a work hour of 16 hours per day and 112 hours per week. The children who stated that they had to work 12 or more hours a day, refer that they need to stay at their worksite for the whole time, where they work, eat, or play with other children. Sometimes their parents work at the same place, and the children tend to stay there helping them.

Nevertheless, no matter how long the working hours were, there was no fixed weekly leave available for anyone. About 40% of the respondents had no weekly leave, and 51% had weekly one day leave. Some respondents (3.3%) said they had weekly leave, but not fixed, which means sometimes they got one day leave on any day of the week, sometimes they didn't get any leave. Only 2.1% had two-day weekly leave. The term "Less than a day" is used to indicate that there were leaves that were not weekly, rather monthly. Some had leave system like two days in a month or three days in a month.

About 64.3% of respondents reported that they got their salary on time. Availability of drinking water, toilet, and place for eating was considered as basic workplace facilities. In terms of these facilities, 71.4% respondents said they had no facilities at all. About 7.1% respondents said they had only drinking

water facilities, and 6.9% said they had only toilet facilities at the workplace. Another 7.8% had both drinking water and toilet facilities. Only about 6% of respondents said they had all the 3 facilities. Also, respondents could think about the place for eating as a relatively clean place beside or within their workplace where they eat their lunch/dinner. These had no facilities of kitchen or decorative functions available and were not meant to be a place for eating when the workplace was designed and constructed.

Table 5. 6 Factors related to workplace of child waste workers

	Work and Workplace	Frequency (n=335)	Percentage
Workplace	STS	279	83.28
	Landfill	8	2.39
	Open Dump	7	2.09
	Recycling Zone/Industry	41	12.24
Duration in current role	Less than 6 Months	119	35.52
	6 Months to 2 Years	103	30.75
	2 years to 5 years	66	19.7
	5 years to 10 years	45	13.43
	More than 10 years	2	0.6
Working hour (per day)	Up to 5 hours	49	14.63
	5 to 7 hours	75	22.39
	7 to 8 hours	59	17.61
	8 to 10 hours	97	28.96
	More than 10 hours	55	16.42
Working hour (per week)	Up to 30 hours	44	13.13
	30 to 36 hours	25	7.46
	36 to 42 hours	41	12.24
	42 to 48 hours	33	9.85
	48 to 60 hours	85	25.37
	More than 60 hours	107	31.94
Weekly leave	No fixed leave	11	3.28
	Less than a day	7	2.09
	One day	171	51.04
	Two days	7	2.09
	More than 2 days	5	1.49
	No leave	134	40
On time Salary		292	64.32

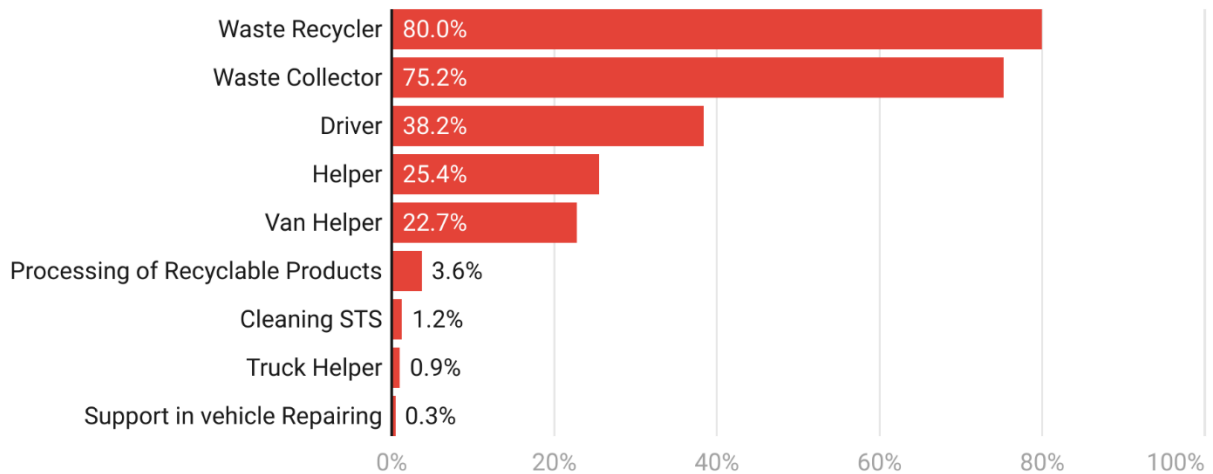


Figure 17 Respondent's role in job

While at their work, the children had to perform various activities. Major activities of the children include picking up waste (71%), collecting waste (77.6%), separating organic and non-organic waste for collecting recyclable materials (75%), dumping waste (71%), driving padded vans carrying the waste (56.1%), and pulling the van towards STS (67.5%). During this time, repeated bending and lifting was also needed to perform (61.8%), along with carrying heavy loads (60.6%). Other activities included cleaning the STSs, repairing the vehicles, and processing recyclable products.

5.2.2 Facilities in Workplace:

Among the workplaces, open dumps had no facilities available. There were some facilities available for child waste workers in the landfill site, although it was dependent on the location of work as the area was bigger and facilities weren't accessible from all the areas. Recycling zones had a relatively higher percentage of facilities, still they were less than 50% (46.3%). Only 4.3% of respondents from STSs reported they had all the 3 facilities available, whereas it was 19.5% for respondents from recycling zones.

	STS (n=279)	Landfill (n=8)	Open Dump (n=7)	Recycling (n=41)	Total
Only Access to Drinking Water	22	1	0	1	24
Only Access to Toilets	20	0	0	3	23
Only Place for eating	3	0	0	0	3
Access to both Drinking water and Toilet	17	2	0	7	26
Access to Drinking water, Toilet, and place for eating	12	0	0	8	20
No facilities	205	5	7	22	239

Figure 18 Access to facilities in terms of work area

Most of the children tend to do more than one task at their workplace, hence they each had several roles in the jobs. About 80% of respondents worked as waste recyclers and 75.2% were waste collectors. The children had to drive vans and do other tasks as well. There were 38.2% respondents who drove van

containing waste and 22.7% respondents who were van helper. About 25.4% of children helped others in their work. Waste is transported to landfills from STSs via trucks. Although the truck drivers were found to be adults, 3 of the respondents worked as truck helpers. Sometimes they also had to clean the STSs and gave support in vehicle repairing. Processing of recyclable products included breaking metals and plastics and working in recycling industries.

5.2.3 Workplace Hazard:

Almost 46.9% of respondents did not feel safe at the workplace. There were many problems and hazards in their workplaces. Most reported hazards that children were exposed to included dust, fumes, and smoke (86.9%), dangerous tools and knives (64.5%), and loud noise and vibration (59.1%). They also faced extreme cold or heat, fire, gas, flames, and chemicals, pesticides, and glues. The children were also exposed to hazardous wastes like Organic material (disposable diapers, toilet paper) (44.1%), and Hospital waste (gauze, disposable syringes, needles) (28.4%). Several wild/stray animals roam around the workplace. Among these animals' dogs (91.0%), rodents (59.4%), birds (43.9%), cats (39.7%), and poisonous animals/insects (30.2%) were most common. Other animals included reptiles (snake, lizards), and horses.

In terms of associated risk of workplace, health risk (77.0%), low wage (50.2%), heavy workload (46.6%), and hazardous work environment (42.4%) were mentioned by the child waste worker. They also reported that it was tough for them to cope as strong physique needed for the jobs (35.0%), and the workplace was unfriendly (12.2%).

Table 5. 7Distribution of workplace hazards and problems

Workplace hazards and problems		Frequency (n=335)	Percentage
Feeling of safety	Yes	178	53.13
	No	157	46.87
Exposure to hazards (Multiple Responses)	Dust, fumes, smoke	291	86.87
	Fire, gas, flames	93	27.76
	Loud noise or vibration	198	59.10
	Extreme cold or heat	132	39.40
	Dangerous tools, knives	216	64.48
	Work at heights	21	6.27
	Work in water/lake/pond/river	5	1.49
	Workplace too dark or confined	41	12.24
	Insufficient ventilation.	32	9.55
	Chemicals, pesticides, glues	101	30.15
	Road Accident	1	0.30
	No hazards faced	1	0.30
	Exposure to animals and hazardous wastes (Multiple Responses)	Dogs	305
Cats		133	39.7
Birds		147	43.88
Horses		8	2.39
Poisonous animal (spider's, scorpions)		101	30.15
Rodents (rats, guinea, pigs)		199	59.4
Reptiles (snakes, lizards)	79	23.58	

Problems at workplace (Multiple Responses)	Organic material (disposable diapers, toilet paper)	148	44.18
	Hospital waste (gauze, disposable syringes, needles)	95	28.36
	No contact with animals	10	2.99
	Heavy workload	156	46.57
	Health Risk	258	77.01
	Unfriendly atmosphere	41	12.24
	Hazardous work environment	142	42.39
	Low paid	168	50.15
	Can't cope as strong physique needed	117	34.93
	Did not face any problem	6	1.79

5.2.4 Physical Abuse:

Child waste workers were abused in many ways. This abuse included slap, punch, kick, or other types of physical punishments. Some of them were abused often, and some were abused only a few times. It was reported that children were abused more by slapped or punched (20.6%) and the occurrence was more than once in most cases (14.9%).

	Yes, once	Yes, a few times (irregular)	Yes, multiple times (often)	Never
Slapped or punched	19	44	6	266
Kicked	7	8	3	317
Done anything else to hurt	3	7	2	323
Thrown something	4	5	2	324
kept standing or kneel down	1	4	0	330
Took food away	1	1	0	333
Burnt as punishment	1	0	0	334

Figure 19 Physical abuse

5.2.5 Punishments and threats:

About 15.2% respondents reported that they were punished and 49.8% reported that they were abused in the workplace at least once. The children were constantly shouted at, repeatedly insulted, and were physically hurt in some way. Also, salary deduction and forced to rejoin the work was noted. A total of 20.9% respondents expressed that they got threats from adult colleagues (12.8%), employers (7.5%), family members, and from local people. These local people included local political leaders, doormen, and residents of the buildings from where they collect waste. It was reported by the children that often waste collectors were accused of theft from apartment complexes or resident buildings.

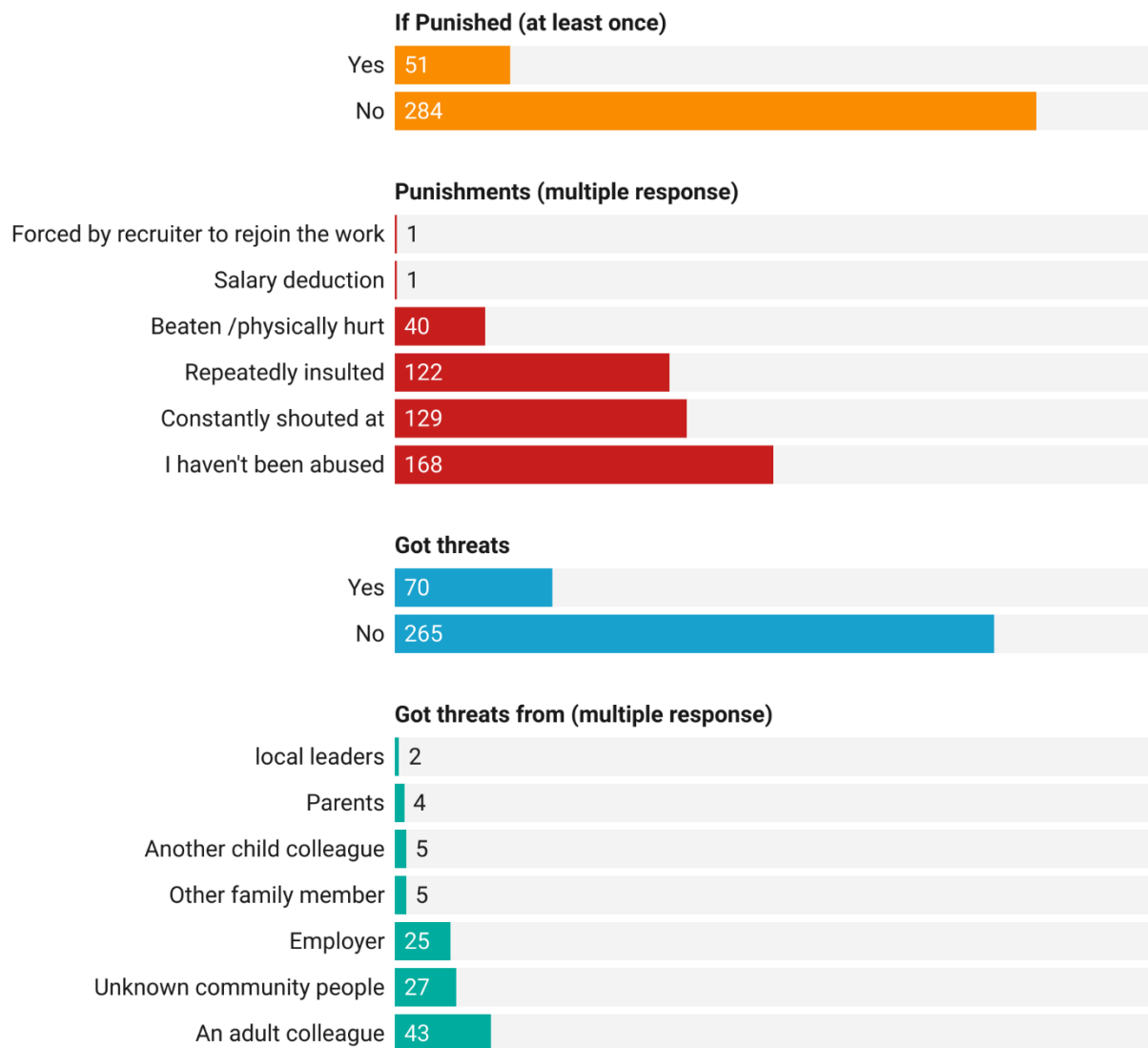


Figure 20 Punishments and Threats

5.3: Waste management related knowledge and safety practice



Key points

- *90% of children know about personal protective equipment (PPE).*
- *Most of the children don't have any PPE thus they were unable to practice wearing PPE.*

Workplace hazards and hazards are crucial to consider especially for children since they might hinder their growth and development. The lack of knowledge of child workers to discern between hazards and threats exposes them to many life-threatening risks. Thus, knowledge about personal protective equipment is more important for waste workers. This section describes the knowledge and practice of personal protective equipment among child waste workers.

5.3.1 Knowledge about Personal Protective Equipment:

Almost 90% of the child waste workers had knowledge about some kinds of PPE and hygiene. Although the children didn't want to or couldn't practice using the PPEs, wearing gloves and rubber boots were known to 67.5% and 63% respondents respectively. As the field survey was undertaken during COVID-19 pandemic, use of mask was well-known to almost everyone. But only 56.1% of children stated that they knew they should wear masks during work. Wearing an apron was known to 29% respondents but only 15% knew that apron could prevent microbial infections. Also, 58% of respondents knew that working with clean dress is essential to prevent skin diseases as well as 70.8% had knowledge that having shower after work could protect them from different kinds of diseases. About 58.2% of the respondents said that they knew they needed to change their dress after work.

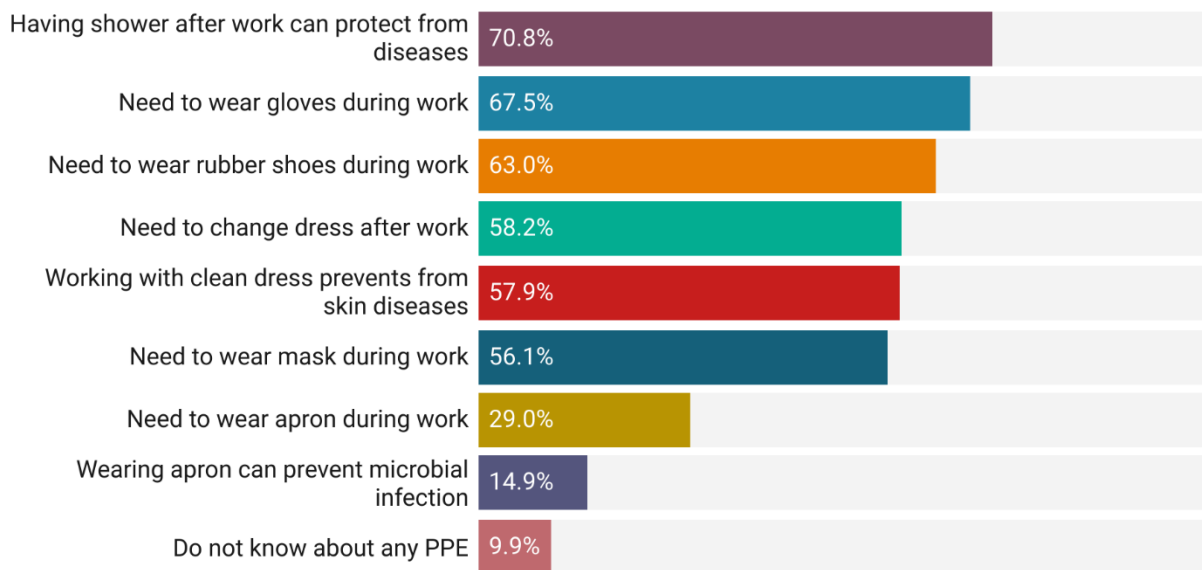


Figure 21 Distribution of Knowledge about PPE and Work Safety

Similarly, qualitative studies explored the notion that waste collectors and recyclers are still very ignorant. They did not get any sort of waste management or waste recycling guidance. Employers of child waste collectors and recyclers do not provide any training to this group of the population. According to one of the waste recyclers' employees,

"This position does not need any training. Children frequently gain access through their parents, relatives, or acquaintances and follow in the footsteps of those who have previously worked here. This is part of the learning process, and their pay rises as their job efficiency improves."

- 51 years old, waste recycler employer, Kalshi, Dhaka.

This study also tries to explore child waste worker's thought on personal protective equipment (PPE). Findings show that children who work as waste collectors and recyclers understand the importance of personal protective equipment. They believe that using personal protection equipment can reduce the severity of health problems and injuries. They also have a rudimentary understanding of PPE on a local level. According to one of the interviewees,

"Yes, wearing musk is a good habit since it may lessen the odors that we are accustomed to on the insides of our bodies, which can be detrimental if they enter our bodies."

- 15 years old, waste collector, Bishawroad, Dhaka.

Despite the fact that the children have a basic understanding of the need for PPE, they understand the requirement of PPE, and they understand how useful PPE is, it was discovered during observation that virtually all children do not use personal protective equipment.

5.3.2 Practice of personal protective equipment (PPE)

Among the 335 respondents, only 9.3% had safety equipment, while none had all the necessary equipment. About 5.7% respondents had face masks, 5.4% had safety gloves, 5.1% had safety footwear, and 1.5% had protective clothing. Despite having this equipment, only 2.5% used this safety equipment

while working. Safety boots, face masks, and safety gloves were used by only a small handful of people. This equipment was sometimes employer provided (3 persons), bought by themselves (3 persons), donated by others (2 persons), and given by NGO (1 person).

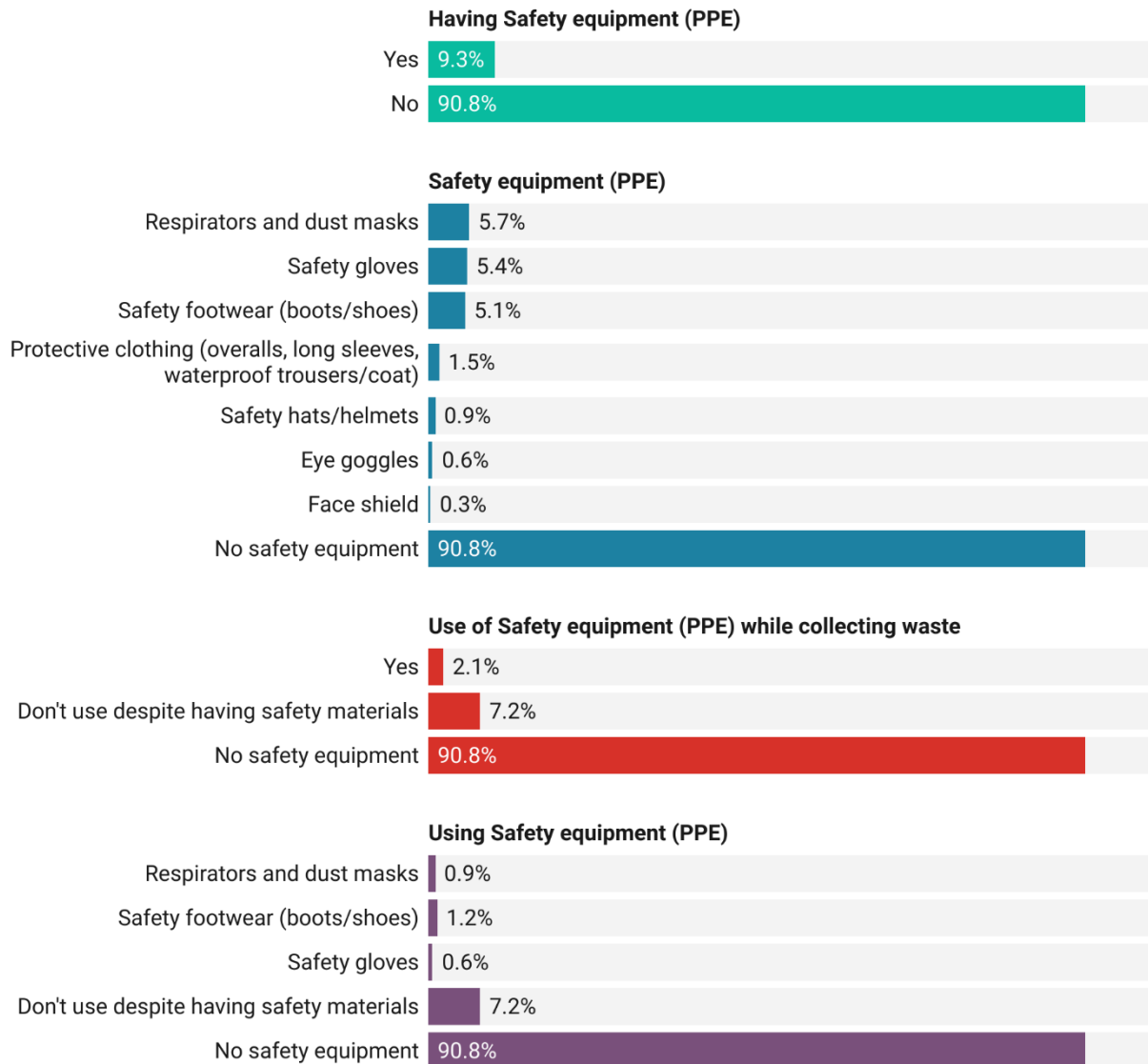


Figure 22 Distribution of Safety equipment's (PPE) use

Qualitative findings also show that child waste workers did not use any personal protective equipment (PPE) despite believing that it can lessen health risks and injuries. They don't use personal protection equipment for a variety of reasons, including a lack of acquaintance with it. Working while wearing PPE is tough for almost everyone who responds. They are uncomfortable wearing hats, gloves, and boots while working because of a lack of experience. According to one of the interviewees,

"The waste workers are unable to wear the mask because we deal with dust and must wipe away the perspiration when it begins to sweat. We are unable to breathe properly. This isn't something we're used to."

- 48 years old, waste recycler employer, Kalshi, Dhaka.

The investigation revealed that, despite believing that personal protection equipment (PPE) is required, trash employees are unable to do so. They are unable to wear personal protective equipment (PPE) for two reasons. One reason is that they are unfamiliar with it, and another is the cost. According to one of the waste collectors,

"I can't work while wearing gloves since it interferes with my natural workflow. If I wear gloves, it takes me longer to do my task. However, if I don't wear gloves, I can complete my tasks more rapidly."

- 16 years old, waste collector, Khilkhet, Dhaka.

Another respondent from the other location mentioned that they are unable to purchase it owing to the high cost. According to the participant,

"We don't wear these since the price is excessive and they aren't long-lasting. We are unable to pay the price."

- 15 years old, waste collector, Khamarbari, Dhaka.

Personal protection equipment (PPE) is not used by waste collectors and recyclers due to a lack of familiarity and price. Furthermore, the waste management stakeholder is not pursuing any PPE-related action. Even though the City Corporation had set aside a limited quantity of PPE for garbage collectors, child waste workers don't have any access to it.

5.4: Occupational Health Sufferings



Key points:

- *Almost 92% of respondent suffering from musculoskeletal pain*
- *Half of the respondent suffering from respiratory diseases*
- *Cuts, bruise, wound is very common injury among child waste workers.*

Child labor has been significantly associated with a variety of negative social and health consequences. Approximately half of all working children are subjected to hazardous jobs, which can have an enormous effect on their development. Especially child waste workers were vulnerable to injuries due to the lack of knowledge to distinguish between hazards and threats. This section will describe the prevalence of different health sufferings of child waste workers including respiratory problems, skin disease and musculoskeletal pain.

Child waste workers of Dhaka are at risk of severe health problems. Due to unhealthy and unsuitable environment for the children, they face various types of health problems. Despite the risks, most of the children thought they were healthy (53.4%). Only 15.5% of children depicted themselves as having poor health conditions.

5.4.1 Prevalence of musculoskeletal pain

Child labor in every sector brings some common problems including musculoskeletal pain. Almost 91% of child waste workers responded that they are suffering from musculoskeletal pain. Due to lifting and carrying heavy loads, pain in shoulder, neck, hand, and lower side of the back were found to be more common. About 63% of children had pain in their shoulder. Several musculoskeletal pains in children showed how vulnerable they were and how much they were affected. About 54.3% had four or more musculoskeletal pains.

Table 5. 8 Frequency distribution of musculoskeletal pain among respondents

Musculoskeletal Pain	Frequency (%)
None	30 (8.96%)
<4 problems	123 (36.72%)
>=4 problems	182 (54.33%)
Total	335 (100%)

Similarly qualitative findings show that musculoskeletal pains are another mandatory suffering for child waste collectors and recyclers. Among all kinds of pain, chest pain is very common to child waste

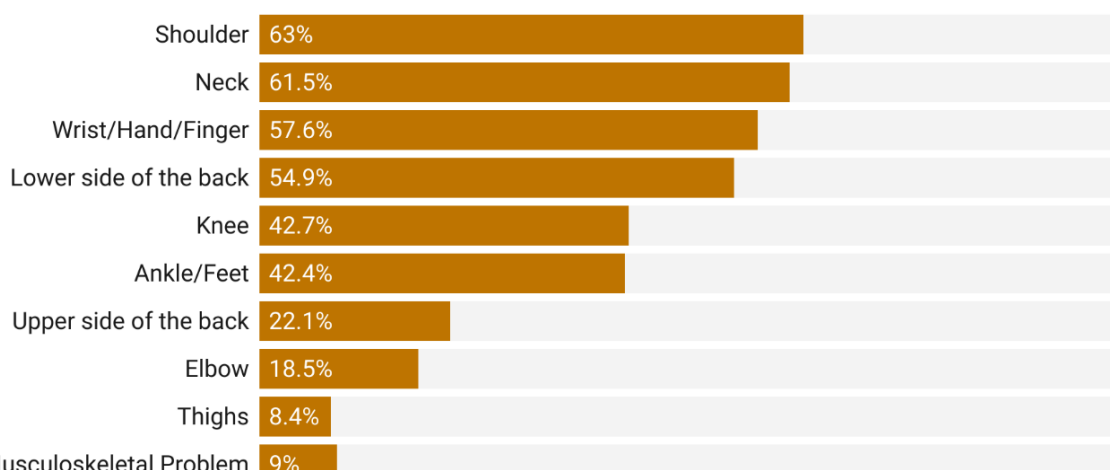


Figure 24 Prevalence of pain in anatomic sites among child waste workers

collectors. Since they are not physically strong enough to carry heavy loads, they wear a tire belt on their chest that is attached to the vehicle. As a result, they have chest pain. A child waste worker used to work the whole day on their feet which is the cause of their leg and knee pain.

Due to collecting heavy wastebaskets from the household level and dumping it to the van repeatedly, they suffer from shoulder pain. One of the respondents talked about how much weight they must lift.

"When the waste bucket is loaded fully, it weighs about 30 kgs. Sometimes 8 kgs or 7 kgs. Households which are of mess systems (bachelor housing) have wastes about 30 to 35 kgs.

- 11 years old, waste collector, Khilkhet, Dhaka.

Respondents mentioned that they suffer from various types of pain due to these heavy lifts.

"I have pain in my legs and in my hands about all the time. I feel this because I have to lift waste buckets with my hands and have to walk more frequently. I have pain in my waist too.... I also have pain in my chest."

- Waste Collector, Khamarbari, Dhaka

In addition, headaches, waist pain, vomiting, physical weakness, loss of appetite, poor health, and chronic respiratory difficulties are all prevalent health issues for waste collector kids. These are so common that they don't recognize them as issues. That was spelled correctly by one of the replies,

"At the beginning, the intensity of the physical pain was high; over the time I coped with that, now I don't feel that much pain."

- 14 years old, Waste collector, Khilkhet, Dhaka

Back pain among waste workers is caused by working in the same position for hours and bending frequently to collect waste and sort it. Intensity of back pain increases with age and although not uncommon among children, they face difficulties while expressing their problems. Generally, the children can't realize how extreme their pain is and face severe consequences later.

5.4.1 Prevalence of respiratory and skin diseases:

The study found that the children were suffering from various diseases and health problems. The skin problem was found to be very high (found among 91.9% respondents). Calluses (60%), itching and rash (57%), blisters (48.7%), and nail problems (44.2%) were the most common skin problems. Gastric/ulcer was also common (50.4%) among the children. Among other general health problems, 24.8% were suffering from chronic fever, 14% from diarrhea, and 6.6% were suffering from arthritis. A total of 4 children said they had migraines and another 2 reported having chronic heart disease. Respiratory problems were found among 52.5% of respondents. The children suffered from dry cough at night (36.1%), asthma (2.1%), and bronchial asthma (8.1%) among other problems.

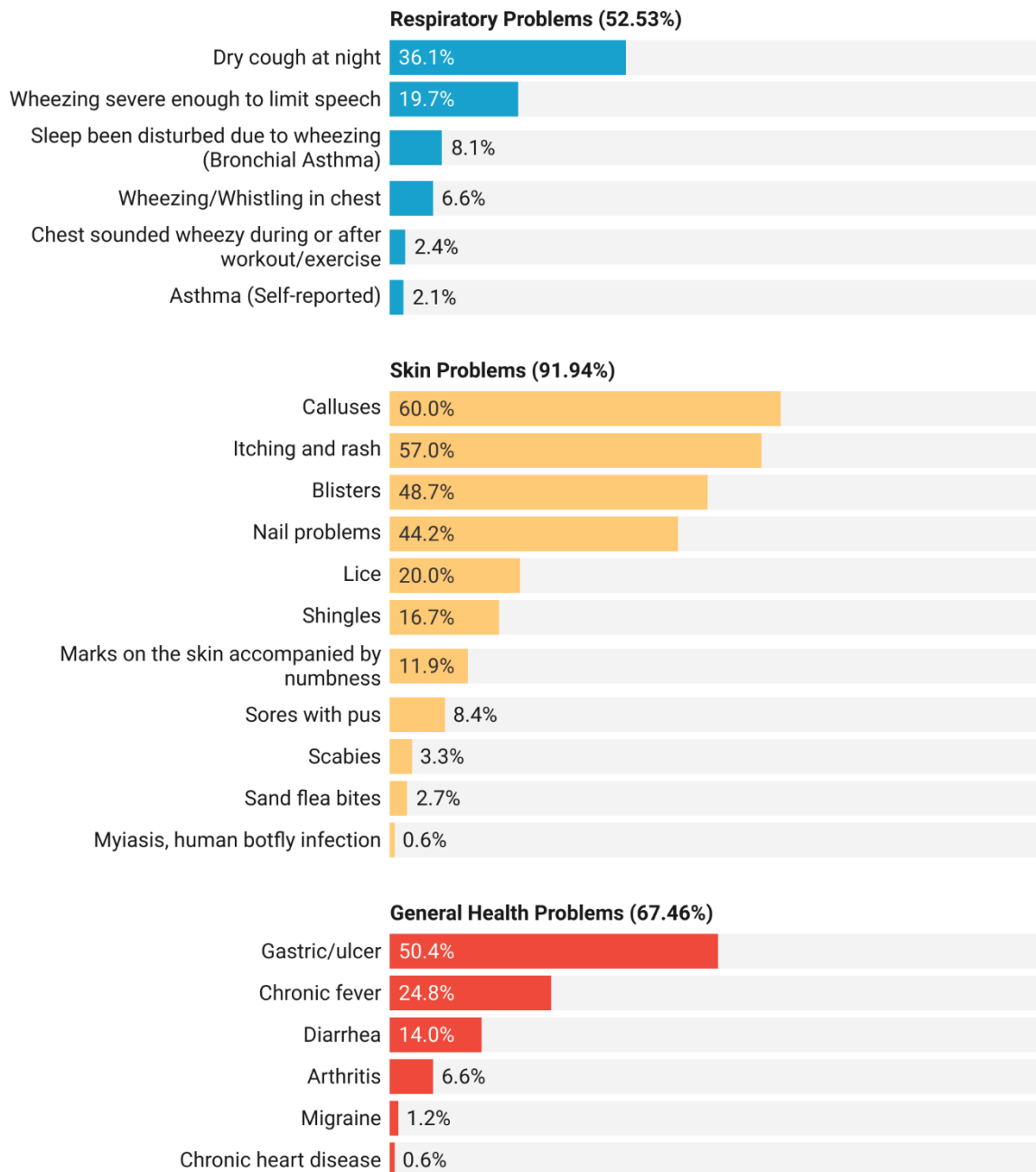


Figure 25 prevalence of different health sufferings

Like above, qualitative findings also shows that Asthma and other respiratory illnesses are very common among child waste workers. According to one of the participants,

"I have trouble breathing when I'm holding something heavy. I can't do this alone. It's like driving underwater and having trouble breathing."

- 14 Years Old, Waste recycler, Kalshi, Dhaka.

During her task, a separate responder described her difficulties. The way she put it,

"When I clean medicine gallons, I have to struggle for breathing from the toxic gases of medicine gallons. The struggle intensifies when I have to clean gallons for different types of medicines."

- 17 years old, female waste recycler, Islambag, Dhaka.

Most responders stated that their lungs had been harmed by the waste gas and smell. When the recycler cleans the medicine gallons, they feel extremely poisonous and strain breathing all of the time.

Again, this is inevitable for a waste collector child to suffer from skin/dermatological problems. The children involved in waste management work long shifts almost every day with dirt and hazardous substances. For these extreme exposures, they are suffering from different types of dermatological problems or skin diseases. One of the respondents disclosed his skin problem,

"I have ringworm in this leg and nothing else. I am using an ointment to cure this; I hope I will cure soon."

- 14 years old, waste recycler, Kalshi, Dhaka.

Another respondent of another area inside Dhaka city stated about itching that he suffered from; he said,

"When I first came to Dhaka and started working here, for the first few days, my whole body was itchy. It was problematic. Then it automatically cured."

- 15 years old, waste collector, Khamarbari Dhaka

The comment above makes sense because they don't have the money or time to seek medical service. It's impossible to avoid skin disorders since they work for a lengthy period of time at a nominal wage. Personal protection equipment (PPE) is a problem for child waste collectors because of the high cost, which is retriggering skin diseases. There are serious health risks for child waste collectors and recyclers because of waste management. Ringworm and skin infection are among the most prevalent ailments among children who work as waste collectors. Itching is the most common ailment they deal with. Along with these and other common skin conditions, eczema, psoriasis, acne, rosacea, and ichthyosis are prevalent.

"One day I got a fever, and after suffering the whole night, I came to my workstation, due to my weakness my body was imbalanced, and by a broken glass, I cut off my leg, then I went back to home."

- 16 Years old, waste recycler, Shantinagar, Dhaka.

5.4.2 Prevalence of occupational injury:

The risk of injury among children working in waste management is much greater than in any other sector. Occupational injuries are quite common, yet children don't seem to be particularly concerned about them.

About 84.2% of the children suffered at least one injury in the past 12 months. Among these injuries, cuts were frequent, and children were very susceptible to them. Almost 78% of the respondents reported about incident of cuts during work. They also suffered from puncture wounds (15.5%) and hit/bruise (9%). While working in this waste management sector, 2 children suffered from burns, 4 had fractures, and another 4 had amputation, which shows the risk of possible serious injuries.

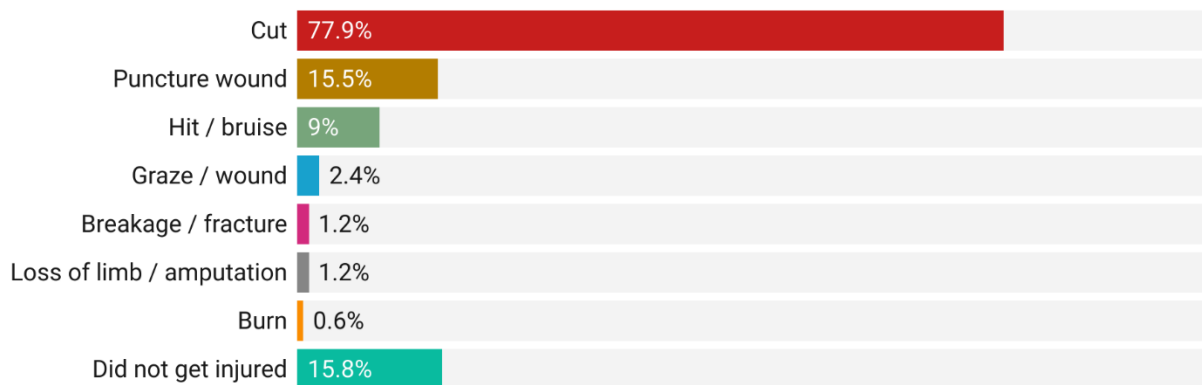


Figure 26 Prevalence of Injuries in last 12 months

5.4.2.1 Prevalence of Cuts:

Cuts were very common among the waste worker children. About 77.9% respondents had suffered from cuts. Hands (96.2%), and legs (84.3%) were severely affected. More than half of these children suffer from cuts on a regular basis (53.4%). After the cut, 23.8% of children had to stop working for more than 1 day and 69.8% didn't had to stop working. For treatment, 72.4% went to pharmacy and only 10.7% went to professional medical service providers. Another 10.7% didn't receive any treatment. Main reason behind not seeking treatment was that they thought the injury was not serious (82.1%). Higher treatment cost (28.6%) and unable to take decision about health services (7.1%) was also mentioned. After the injury, most of the respondents didn't have any limitation (72.6%), but some had to suffer pain (18.9%), movement limitation (7.1%), and numbness (1.1%). One respondent mentioned they suffered from a decrease in their hearing ability.

Table 5. 9 Distribution of injuries due to cut

Cuts, cuts frequency, and Effects		Frequency (n=261)	Percentage
Cut occurred	<i>Hands</i>	251	96.17
	<i>Feet's</i>	220	84.29
	<i>Upper limb except hands</i>	4	1.53
	<i>Lower limb except feet</i>	4	1.53
	<i>Head</i>	6	2.3
	<i>Trunk</i>	1	0.38
Cut frequency (In last 1 year)	<i>Up to 12 times</i>	54	16.12
	<i>12 to 52 times</i>	28	8.36
	<i>52 to 365 times</i>	179	53.43
	<i>Not injured</i>	74	22.09
Had to stop working (In last 1 year)	<i>Needn't stop working</i>	181	69.35
	<i>1 day</i>	6	2.3
	<i>2 to 7 days</i>	45	17.24
	<i>More than 7 days</i>	17	6.51
	<i>Less than a day</i>	12	4.6
Service seeking due to cut	<i>Govt. Health Worker</i>	2	0.77
	<i>Community Clinic</i>	2	0.77
	<i>Govt. District/Sadar/General Hospital</i>	10	3.83
	<i>Govt. Medical College/Specialized Hospital</i>	13	4.98
	<i>Private Medical</i>	1	0.38
	<i>Pharmacy/Dispensary</i>	189	72.41
	<i>Homeopath</i>	1	0.38
	<i>Ayurveda/Kabiraj/Hekim</i>	1	0.38
	<i>Other Traditional/Spiritual</i>	1	0.38
	<i>Family/Self Treatment</i>	117	44.83
	<i>Did not go anywhere / No service</i>	28	10.73
Reason for not seeking health services due to cut	<i>Not serious problem</i>	23	82.14
	<i>Treatment cost is too much</i>	8	28.57
	<i>There was none to accompany</i>	1	3.57
	<i>Didn't know where to go</i>	1	3.57
	<i>Unable to take decision about health services</i>	2	7.14
Hospitalization	<i>Didn't need hospitalization</i>	252	96.55
	<i>1 day</i>	1	0.38
	<i>2 to 6 days</i>	4	1.53
	<i>More than 7 days</i>	4	1.53
Limitation remained after injury	<i>Pain</i>	53	92.98
	<i>Movement limitation (bend</i>	20	35.09
	<i>Loss of touch/sensibility, numbness</i>	3	5.26
	<i>Decrease or loss of hearing ability</i>	1	1.75
	<i>No limitation</i>	204	78.16

Qualitative study also explored that due to needles, broken glass, metals, and other dangerous things, children fall into wounds, endangering their lives. They cut their hands and feet almost every day while sorting and collecting waste. They don't care about minor injuries; children waste collectors count injuries when it's not under control and life-threatening. Sometimes they fall into severe injury by broken glass and blades. One of the respondents who used to help his father in waste management said,

"When I came here the first time, I got injured severely, my leg was cut by a piece of broken glass and after suffering for 4 months I recovered."

- 17 years old, Waste collector, Dhanmondi, Dhaka.

During collecting and sorting waste, every day, the waste collector and waste recyclers face several injuries. The high frequency of the injury has habituated them to be normal with the injuries. One of the respondents has said,

"I'm not sure if it cuts or cures at all. I have to deal with this on a daily basis. What's the best way for me to monitor this? Please have a look at my lower leg. When it happened, I don't know. It's going to heal itself."

- 17 years old, Waste recycler, Kalshi, Dhaka

5.4.2.2: Prevalence of puncture wounds

Among the 15.5% respondents who suffered punctured wound, about 8.1% suffered almost on a regular basis. Most of the respondents suffered wounds in their hands (92.1%), and legs (84.3%). About 69.2% didn't stop working after getting wounded and 21.2% had to stop working for more than 1 day. The children typically didn't give much concern to the wounds. Only 3 of the respondents (5.8%) have sought professional and authorized medical services. One of these children needed 2 days hospitalization. About 15.4% hadn't taken any medical services while most took medical services from local pharmacies (71.2%) or self-treatment (61.5%). The reasons for not taking medical services were either they didn't think the injuries as serious problems, or the treatment cost was high. These wounds have caused the children pain (23.1%), movement limitation (3.9%), and loss of touch or numbness (3.9%).

Table 5. 10 Distribution of injury due to puncture wounds

	Puncture wounds	Frequency	Percentage
Puncture Wound Frequency	<i>Up to 12 times</i>	14	4.18
	<i>12 to 52 times</i>	1	0.3
	<i>52 to 365 times</i>	27	8.06
	<i>Can't remember</i>	10	2.99
	<i>Not injured</i>	283	84.48
Puncture Wound Occurred* (51 responses)	<i>Hands</i>	47	92.16
	<i>Feet's</i>	43	84.31
	<i>Upper limb except hands</i>	3	5.88
	<i>Lower limb except feet</i>	4	7.84
	<i>Less than a day</i>	2	3.85
Had to stop working	<i>1 day</i>	3	5.77
	<i>2 to 7 days</i>	9	17.31
	<i>More than 7 days</i>	2	3.85
	<i>Needn't stop working</i>	36	69.23
	Service seeking due to puncture wound	<i>Community Clinic</i>	1
<i>Govt. District/Sadar/General Hospital</i>		2	3.85
<i>Pharmacy/Dispensary</i>		37	71.15
<i>Family/Self Treatment</i>		32	61.54
<i>Didn't go anywhere / No service</i>		8	15.38
Reason for not seeking health services due to puncture wound	<i>Not serious problem</i>	6	75
	<i>Treatment cost is too much</i>	2	25
	<i>Suspecting for a serious disease</i>	1	12.5
	<i>Unable to take decision about health services</i>	1	12.5
How many days you have to be hospitalized?	<i>Didn't need hospitalization</i>	51	98.08
	<i>2 days</i>	1	1.92
Limitation remained after injury	<i>pain</i>	12	100
	<i>movement limitation (bend less, stiffened joint)</i>	2	16.67
	<i>loss of touch/sensibility, numbness</i>	2	16.67
	<i>No limitation</i>	40	76.92

5.4.2.3: Prevalence of Hit/Bruise

Hit/bruise was reported by 9% of the respondents. The children reported getting hit/bruise, mostly suffered on a regular basis (3.6%). Hands (80%), and legs (90%) were most affected among these children. Some respondents suffered hits to the head (10%). Nine of the thirty respondents had to stop working to get hits and bruises. In the cases of being hit by vehicles, the children needed hospitalization. Among the affected, 13.3% of children needed hospitalization where 1 respondent needed more than 7 days hospitalization. One-third of children had to take professional medical services, though most depended on pharmacies (70%) and self-treatment (43.3%). The 2 respondents who didn't seek any

medical services didn't think the injury was serious. About 83.3% respondents had no limitations after the injury whereas 16.7% suffered from pain and 6.7% suffered from movement limitations.

Table 5. 11 Distribution of injury due to hit/Bruise

	Hit/Bruise	Frequency	Percentage
Hit/bruise frequency	<i>Not injured</i>	305	91.04
	<i>Can't remember</i>	10	2.99
	<i>Up to 12 times</i>	7	2.09
	<i>12 to 52 times</i>	1	0.3
	<i>52 to 365 times</i>	12	3.58
Hit/bruise occurred	<i>Hands</i>	24	80
	<i>Feet's</i>	27	90
	<i>Upper limb except hands</i>	4	13.33
	<i>Lower limb except feet</i>	3	10
	<i>Head</i>	3	10
Had to stop working	<i>1 day</i>	1	3.33
	<i>2 to 7 days</i>	5	16.67
	<i>More than 7 days</i>	4	13.33
	<i>Needn't stop working</i>	20	66.67
Service seeking due to puncture wound	<i>Govt. District/Sadar/General Hospital</i>	6	20
	<i>Govt. Medical College/Specialized Hospital</i>	4	13.33
	<i>Pharmacy/Dispensary</i>	21	70
	<i>Ayurveda/Kabiraj/Hekim</i>	1	3.33
	<i>Family/Self Treatment</i>	13	43.33
	<i>Didn't go anywhere / No service</i>	2	6.67
Reason for not seeking health services due to puncture wound	<i>Not serious problem</i>	2	100
How many days you have to be hospitalized?	<i>Didn't need hospitalization</i>	26	86.67
	<i>1 day</i>	1	3.33
	<i>2 to 6 days</i>	2	6.67
	<i>More than 7 days</i>	1	3.33
Limitation remained after injury	<i>pain</i>	5	16.67
	<i>movement limitation (bend less, stiffened joint)</i>	2	6.67
	<i>No limitation</i>	25	83.33

5.4.2.4 Prevalence of Accident

While dropping waste into the STS, the waste collector children frequently get into crashes with other cars. Other vehicles jiggle the van as they pull it slowly down the road, which is a serious source of their injuries. According to one of the interviewees,

"A truck came from behind and took me on my legs a few days ago when I was resting on the side of the bridge after dropping the trash. Take a look at how bloated my legs are."

- 11 Years old, waste collector, Khilkhet Dhaka.

Children are frequently involved in accidents and suffer injuries. The frequency and severity of workplace injuries and accidents have led people to believe that it is normal and a part of their lives. Another Kalshi waste recycler child recalled how he was hurt, saying,

"I was carrying a heavy load of metal, which was so heavy that I eventually lost my grip and it fell on my foot, injuring my leg and foot severely."

- 15 Years old, waste recycler, Kalshi, Dhaka.

Stray dogs pose a big concern to child waste collectors in the job. Dogs have been known to attack and bite individuals at work, especially children.

5.4.3: Health seeking behavior practice

The health service's seeking method and behavior among child waste collectors are alarming. They never used to go to the hospital or doctor for minor injuries like needle piercing or tiny cuts to the hands and feet. To cure this kind of injury, they use a home remedy, even if sometimes they don't do anything. They used to have tetanus injections once a month to protect themselves from the risk of infection. The child does not seek health service from a hospital or doctor because of their poor income. Because of the cheaper cost, getting health services from dispensaries is common. Children who work in waste management usually go to the hospital if they have an acute injury that they can't handle, such as a stitched wound or a bone fracture. Typically, individuals go to the dispensary on the advice of the pharmaceutical seller to resolve the injury. However, if they can handle it, they do not go elsewhere to seek health treatments. One of the child waste workers explained his health-seeking activity as follows,

"There is no need for me to use any medication. This is a common occurrence for me. I eventually don't know when I will get hurt since I'm so used to it. Take a look at my leg and see how many times it's been wounded."

- 15 years old, waste recycler, Kalshi, Dhaka.

When the injury is life-threatening, and out of tolerance, only then does the child waste worker used to go to the hospital. The employer of the child waste worker bears the cost of treatment rarely and only when the injury is minor, and they do not do that for more than one or two days. It has also been found that folk medicine service-seeking behavior is accustomed among child waste collectors because it is less expensive. One of the respondent's fathers has stated,

"One day, I noticed that my son's face had curved, I was worried, I did not have sufficient money to go to a doctor, Then I went to Kabiraj (folk medicine and treatment provider), and he looked after my son and gave him treatment. Now my son is okay, but sometimes he feels pain in his chest."

- 44 years old, waste recycler employer, Notun Bazar, Dhaka.

5.5: COVID-19 and its impact on income and employment opportunities

From the start of January 2020, COVID-19 began to spread all over the world. The first patient was identified in March 2020 in Bangladesh. Since then, the pandemic has affected almost all the working sectors. Evidence shows that child waste worker more detrimental working circumstances, including lower pay and longer hours[63]. The Consortium for Street Children (CSC) illustrates the pandemic's impact on child waste workers is severe as they are not permitted to go outdoors due to lockdown[64]. This section describes the knowledge and vaccination status among child waste worker first, then the impact of pandemic on their income were also explored.

5.5.1 Knowledge and vaccination status of child waste worker:

About 54.9% of the respondents had knowledge about COVID-19 vaccine. Despite the knowledge and the availability of vaccine to school going children (same age as the waste worker children), 95.2% respondents didn't receive vaccine. Only 5 respondents (1.5%) took 2 doses of vaccine by December 2021.

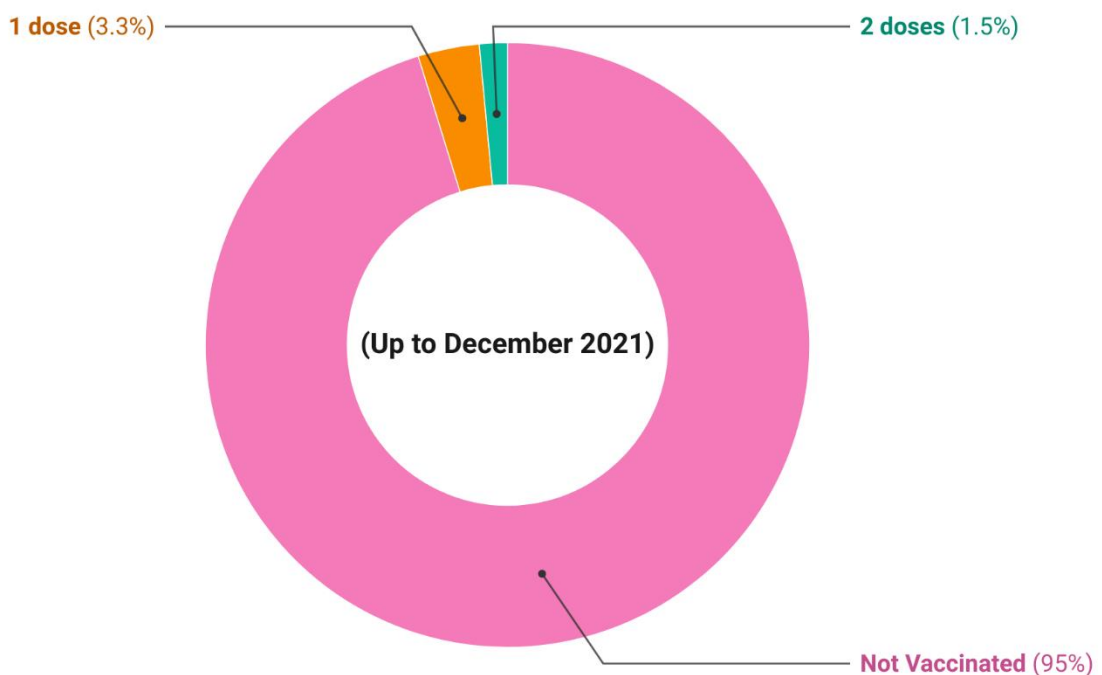


Figure 27 COVID-19 vaccination status among child waste workers

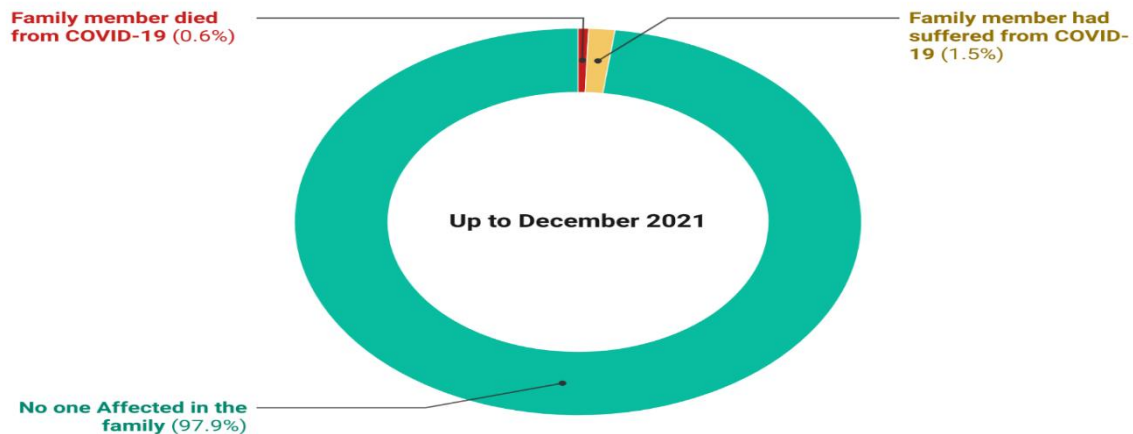


Figure 28 Family members affected by COVID-19

5.5.2 Reason for not getting vaccinated:

The reason for not getting vaccine was diverse. The major problem was not having the documents needed for registration (42%). Registration procedure was unclear to them too (37.3%). Some feared about the side effects of vaccine (17.2%), and some couldn't manage time for vaccination (1%). Two of the respondents were waiting for serial. Apart from these technical problems, many were not convinced with the vaccination. About 32.6% reported that the vaccine was not needed. Another 8.2% said that COVID-19 would affect only the rich people. Misconception, fear of death from vaccine, restriction from family/employer, and anti-vaccine conspiracy was prevalent among the children. All of these contributed to the smaller number of vaccinations among the children.

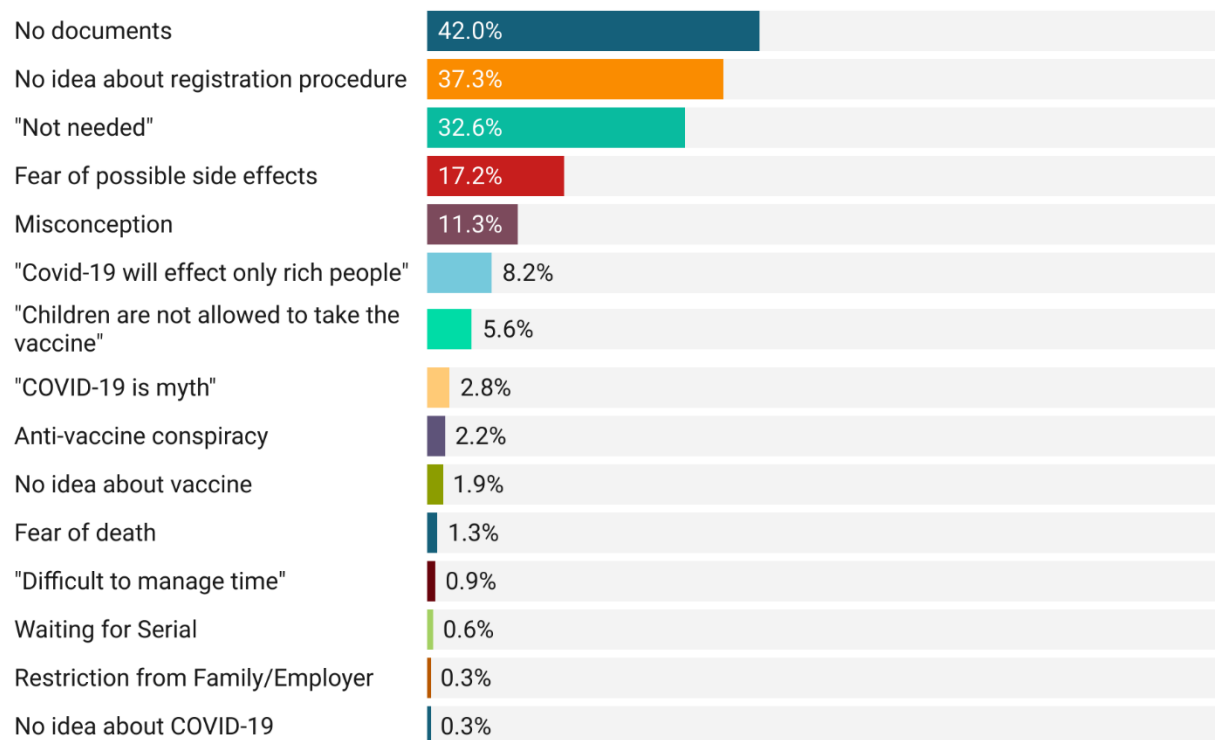


Figure 29 Reasons for not getting vaccinated for COVID-19

5.5.1 Lockdown effect on employment and income:

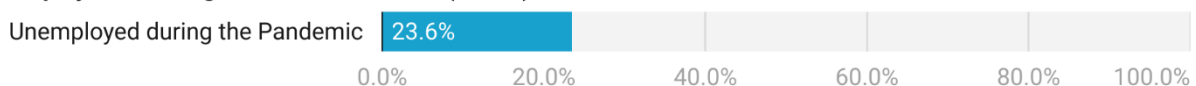
About 23.6% respondents were unemployed during the pandemic. Among them, only 5.1% were unemployed for more than 1 year. About 32.9% of respondents got back to work within 3 months and 38% within 6 months of unemployment. Earnings stopped for 14.9% respondents and earnings decreased a lot for 9.6% respondent. About 53.4% of respondents had no effect on income as they have to continue their work during lockdown time also.

Those who had decreased or stopped over time, had an effect on their family income too. About 18.7% responded that their family income stopped and 32.9% responded that their family income decreased a lot. Only 13.6% of these were involved in other jobs because of decreased earnings.

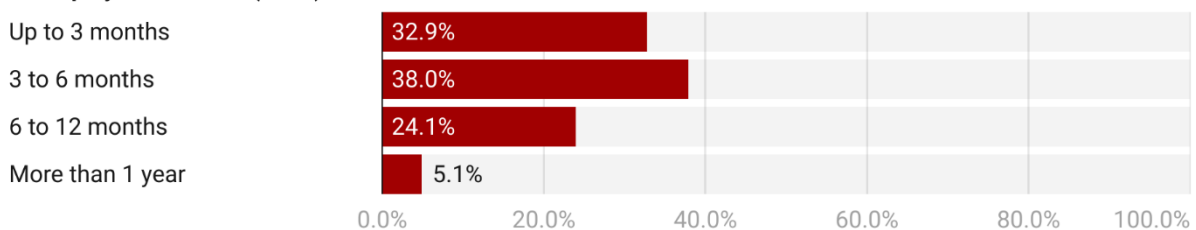
About 32.2% respondents said at least one of their family members had been unemployed or had remained unemployed since the lockdown period.

About 26.5% said they have recovered completely from their economic losses/crisis. Some were still in debt (14.2%), and some recovered partially (47.7%). Most of them had plans to recover from the crisis by themselves (71%), or no plan at all (18.4%). They also planned to take new personal loans to repay their previous debts.

Employment during COVID-19 Pandemic (n=335)



Unemployment Period (n=79)



Lockdown effect on income (n=335)

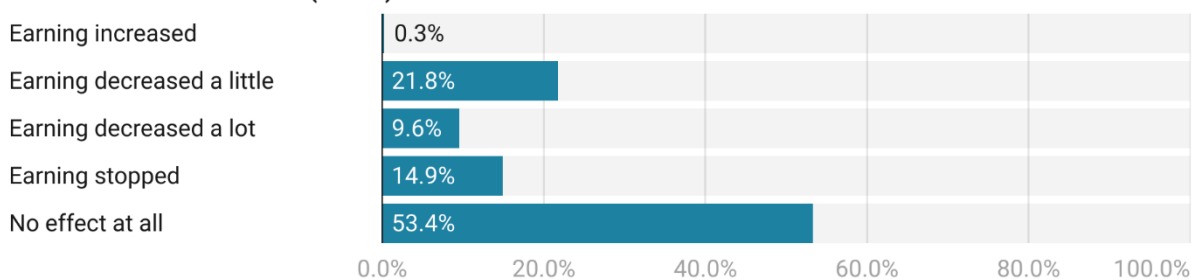
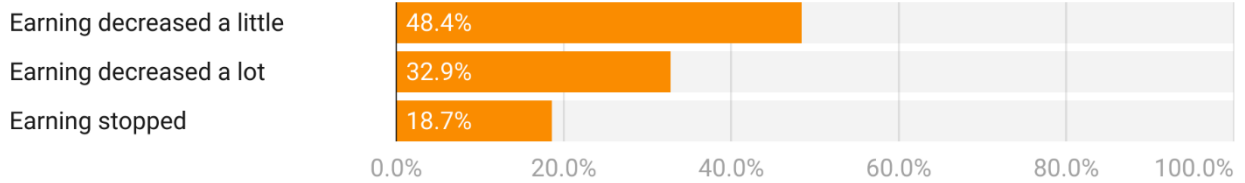
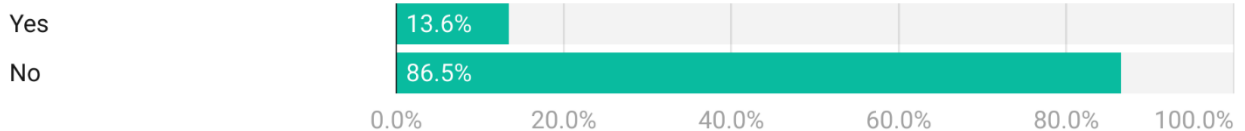


Figure 30 Effect of lockdown in employment and income (i)

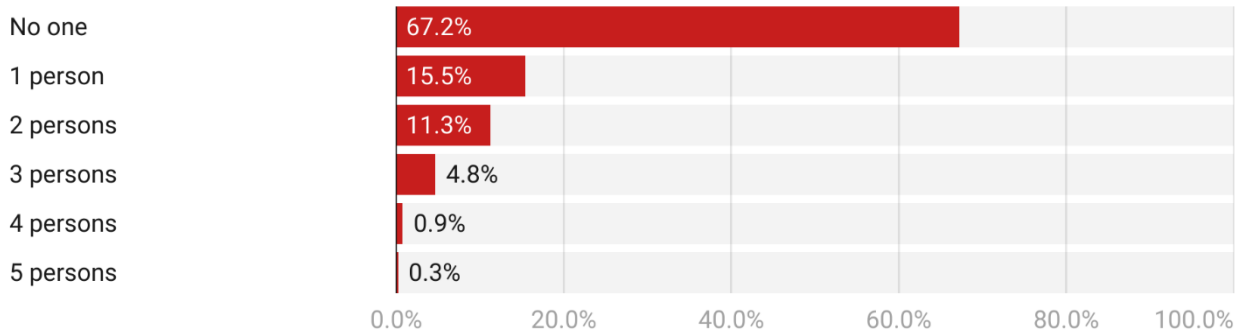
Lockdown effect on family income (n=155)



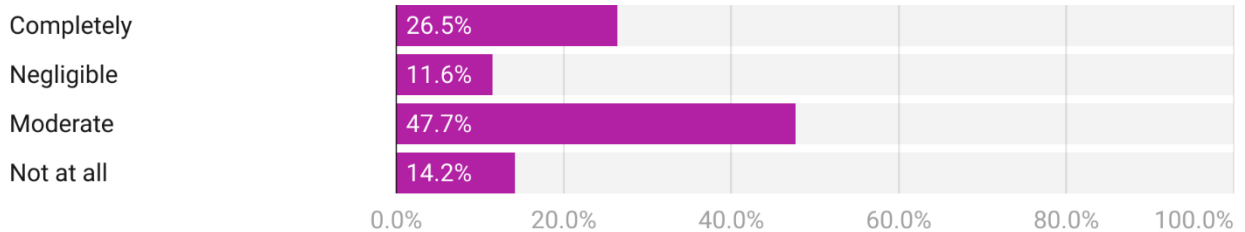
If earning reduced, Involvement in any other job (n=155)



Earning family members have become/remained unemployed during lockdown (n=335)



Recovered the economic losses of pandemic after the strict lockdown (n=155)



Plan to recover (n=114)

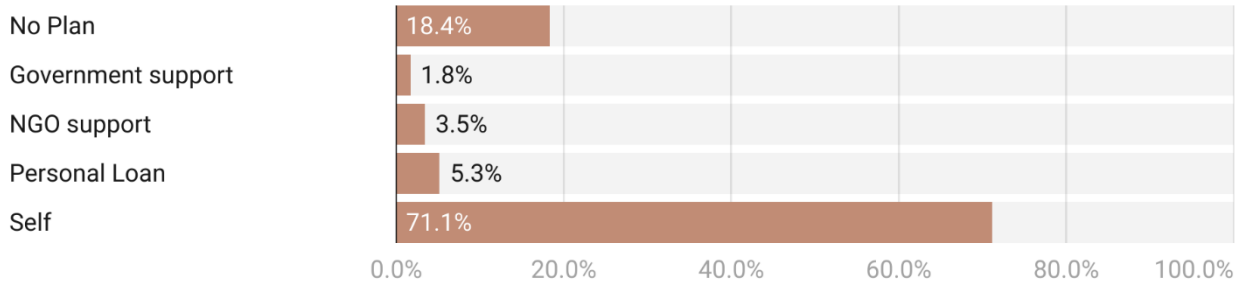


Figure 31 Effect of lockdown in employment and income (ii)

Chapter 6: Conclusion and Recommendation

The Sustainable Development Goals (SDGs)- 2030 explicitly promised to ensure “no one is left behind.” Under the target 8.7 of this goal aims to eliminate the worst forms of child labour, including the recruitment and use of child soldiers, as well as to end all forms of child labour. Certainly, informal child waste workers are an integral part of it as it is one of the most exploitative forms of child labor. Despite increased global and national concern about the adverse effects of child work by labour and child rights agencies, the plight of the vast majority of children in the informal sector has not been studied to the level that the magnitude of the situation requires. As in many other developing nations, data of informal child labour is scares, particularly for the informal child waste workers. Thus, this paper, for the first time in context of Dhaka, presents the comprehensive scenario of child waste workers and their health sufferings.

Multifarious push and pull factors work behind the decision of involving children in waste management. The most prevalent reason for children being engaged in waste management is to lessen the consequences of the economic downturn and poverty caused by a financial crisis and the necessity to support one's family. In urban areas, where the living cost is high, children try to get involved in works that are easy for them and require. In terms of pull factors, children involved in the waste management sector due to the availability of job which does not require any formal education, experience, or training. While in the case of recruiters, they prefer child waste workers as they can employ children with minimum wages. As well as migration, drop out from the school due to pandemic, family involvement also contributes as push factors. In terms of health sufferings, children who work in waste management are particularly vulnerable to occupational injuries and health issues that vary from mild to catastrophic. Musculoskeletal pain, Respiratory problem, cutting off the skin, especially the hand and leg, during collection and sorting of waste is very frequent, like it's a part of their life. Also, they are coping with various types of skin disease as an integral part of their daily life.

Child waste workers face a variety of employment risks. Despite the fact that there are numerous children employed in the waste management sector, these children are usually excluded from traditional child protection and support systems, making them more susceptible to bullying and other workplace hazard. When designing particular programs for these vulnerable populations, the following issues should be taken into consideration.

- Since poverty is the main push factor, in order to combat poverty, policy changes and poverty reduction initiatives must be pursued as essential upstream issues. To solve the problem, a comprehensive, multi-sectoral development strategy is required.
- As school dropout is a major concern thus, existing stipend programmes must either be upgraded and specifically targeted or abandoned in order to reduce expenses to zero. Community-based preventive measures should be emphasized to make it easier for children to attend schools to obtain a free education.
- Workplaces must be free from ethical, physical, and psychological abuse. Special attention should be given to working hours of children and proper medical facilities should be provided for the child waste workers.
- To help policymakers to formulate focused policies and developing appropriate interventions, there should be precise and trustworthy statistics on child labour in Bangladesh focusing on informal child labor.
- To mitigate the occupational health sufferings, suitable safety equipment, such as facemasks, gloves, boots, and rag-sorting instruments, to keep them from accidents and illnesses. Employers should allocate more resources to mitigate hazards at work and expand their safety training programmes. as well as efficient monitoring and evaluation in the workplace to maintain proper health and safety standards.
- Governments should engage with the relevant employers' and workers' organizations on a regular basis to update their "hazardous child labour lists" in order to formulate focused policies and appropriate interventions.
- Proper awareness program should be designed among individual, community and stakeholders' level to inform about the obligations for eliminating hazardous child labour by emphasizing on alternate income-generating programmes for this group of children.

Annex: A (Photo Repository)



Picture from qualitative data collection field.



Photo ©JPGSPH



Photo ©JPGSPH

The full data collection team and researcher with landfill official during data collection from Mutual Landfill

Annex: B (Tables)

Annex 1 Distribution of Current education enrollment situation

Current Education Enrollment	Frequency (%)
Enrollment in educational institutions (n=335)	<i>Have enrolled in educational institutions</i> 249 (74.33%)
	<i>Never enrolled in educational institutions</i> 86 (25.67%)
Current enrollment in educational institutions (n=249)	<i>Currently Enrolled</i> 33 (13.25%)
	<i>Dropped Out of School</i> 216 (86.75%)
Current Study Level (n=33)	<i>Pre-school</i> 2 (6.06%)
	<i>Up to Primary</i> 22 (66.67%)
	<i>Up to Secondary</i> 9 (27.27%)
Reasons for never enrolling in any educational institutions (n=86) [Multiple Choices]	<i>Family did not allow</i> 14 (16.28%)
	<i>Could not afford schooling</i> 39 (45.35%)
	<i>Parents were unable to work</i> 5 (5.81%)
	<i>Needed to support the family financially</i> 30 (34.88%)
	<i>Needed to work full time</i> 13 (15.12%)
	<i>Disabilities/illness</i> 2 (2.33%)
	<i>Education was not considered Valuable</i> 23 (26.74%)
	<i>Helped family members at work as an unpaid worker</i> 8 (9.3%)
	<i>Was not interested in school</i> 31 (36.05%)
	<i>To learn a job</i> 8 (9.3%)

Annex 2 Distribution of dropout from educational institutions

	Variable	Frequency (%)
Education level of children who dropped out of school (n=216)	<i>Pre-school</i>	4 (1.85%)
	<i>Up to Primary</i>	173 (80.09%)
	<i>Up to Secondary</i>	37 (17.13%)
	<i>SSC/Equivalent (Passed)</i>	2 (0.93%)
	<i>Family did not allow</i>	26 (12.04%)
	<i>Could not afford schooling</i>	96 (44.44%)
	<i>Parents were unable to work</i>	9 (4.17%)
	<i>Needed to support the family Financially</i>	120 (55.56%)
	<i>Needed to work full time</i>	30 (13.89%)
	<i>Disabilities/illness</i>	3 (1.39%)
Reasons behind school drop (n=216) [Multiple Choices]	<i>School was too far</i>	1 (0.46%)
	<i>Education was not considered Valuable</i>	23 (10.65%)
	<i>Helped family members at work as an unpaid worker</i>	29 (13.43%)
	<i>Did not feel safe at school</i>	4 (1.85%)
	<i>Not interested in school</i>	46 (21.3%)
	<i>Poor grades in exams</i>	3 (1.39%)
	<i>To learn a job</i>	15 (6.94%)
	<i>Stopped due to COVID-19 Pandemic</i>	16 (7.41%)
	<i>Migration to another area</i>	7 (3.24%)
	Willingness to start formal education again (n=302)	<i>Yes</i>
<i>No</i>		216 (71.52%)
Reasons behind no interest in education (n=216) [Multiple choices]	<i>No interest</i>	204 (94.44%)
	<i>Can't cope due to long break</i>	83 (38.43%)
	<i>Classmates and friends were not cooperative</i>	2 (0.93%)
	<i>Fear of being neglected by teachers</i>	1 (0.46%)
	<i>needed special facilities</i>	1 (0.46%)
	<i>Family did not allow</i>	1 (0.46%)

Annex 3 Facilities available to the workplace based on types of Workplaces

Facilities available to workplace	STS (n=279)	Landfill (n=8)	Open Dump (n=7)	Recycling (n=41)	Total (n=335)
<i>Only Access to Drinking Water</i>	22 (7.89)	1 (12.5)	-	1 (2.44)	24 (7.16)
<i>Only Access to Toilets</i>	20 (7.17)	-	-	3 (7.32)	23 (6.87)
<i>Only Place for eating</i>	3 (1.08)	-	-	-	3 (0.9)
<i>Access to both Drinking water and Toilet</i>	17 (6.09)	2 (25)	-	7 (17.07)	26 (7.76)
<i>Access to Drinking water, Toilet, and place for eating</i>	12 (4.3)	-	-	8 (19.51)	20 (5.97)
<i>No facilities</i>	205 (73.48)	5 (62.5)	7 (100)	22 (53.66)	239 (71.34)

 $\chi^2 = 30.8288$ (p = 0.009)

Annex 4 Distribution of Work role and activities of child waste workers

Work role and activities		Frequency (n=335)	Percentage
Role in the Job (Multiple Responses)	<i>Waste Collector</i>	252	75.22
	<i>Waste Recycler</i>	268	80.00
	<i>Driver</i>	128	38.21
	<i>Helper</i>	85	25.37
	<i>Truck Helper</i>	3	0.90
	<i>Van Helper</i>	76	22.69
	<i>Processing of Recyclable Products</i>	12	3.58
	<i>Cleaning STS</i>	4	1.19
	<i>Support in vehicle Repairing</i>	1	0.30
	Types of activities	<i>Picking up waste</i>	238
<i>Separating organic and non-organic waste</i>		251	74.93
<i>Collecting waste</i>		260	77.61
<i>Drive the rickshaw van carrying the waste</i>		188	56.12
<i>Repeated bending & lifting</i>		207	61.79
<i>Carrying heavy loads</i>		203	60.6
<i>Pulling the van towards STS</i>		226	67.46
<i>Dump the waste into the STS</i>		238	71.04
<i>Cleaning the STS</i>		5	1.49
<i>Repairing the vehicle</i>		1	0.3
<i>Processing recyclable products</i>	11	3.28	

Annex 5 Age wise role in job

Role in Job	11 years old and Below (n=40)	12 to 15 years old (n=132)	16 to 17 years old (n=163)	Total (n=335)
<i>Waste collector</i>	20 (50%)	100 (75.76%)	132 (80.98%)	252 (75.22%)
<i>Waste recycler</i>	33 (82.5%)	105 (79.55%)	130 (79.75%)	268 (80%)
<i>Driver</i>	-	32 (24.24%)	96 (58.9%)	128 (38.21%)
<i>Helper</i>	9 (22.5%)	37 (28.03%)	39 (23.93%)	85 (25.37%)
<i>Truck helper</i>	1 (2.5%)	1 (0.76%)	1 (0.61%)	3 (0.9%)
<i>Van helper</i>	10 (25%)	40 (30.3%)	26 (15.95%)	76 (22.69%)
<i>Processing of recyclable products & operating</i>	4 (10%)	4 (3.03%)	4 (2.45%)	12 (3.58%)
<i>Cleaning STS</i>	-	-	4 (2.45%)	4 (1.19%)
<i>Support in vehicle repairing</i>	1 (2.5%)	-	-	1 (0.3%)

 $\chi^2 = 139.3030$ (p = 0.000)

Annex 6 Use of Safety Equipment (PPE)

Safety Equipment's (PPE) Use		Frequency	Percentage
Having Safety equipment (PPE)	<i>Yes</i>	31	9.25
	<i>No</i>	304	90.75
Having Safety equipment (PPE)	<i>Eye goggles</i>	2	0.60
	<i>Face shield</i>	1	0.30
	<i>Safety hats/helmets</i>	3	0.90
	<i>Respirators and dust masks</i>	19	5.67
	<i>Protective clothing (overalls, long sleeves, waterproof trousers/coat)</i>	5	1.49
	<i>Safety footwear (boots/shoes)</i>	17	5.07
Use Safety equipment (PPE) while collecting waste	<i>Yes</i>	7	2.51
	<i>No</i>	272	97.49
Using Safety equipment (PPE)	<i>Respirators and dust masks</i>	3	0.90
	<i>Safety footwear (boots/shoes)</i>	4	1.19
	<i>Safety gloves</i>	2	0.60
Source of Safety equipment (PPE)	<i>Employer provided</i>	3	0.90
	<i>Given by NGO</i>	1	0.30
	<i>Bought myself</i>	3	0.90
	<i>Donated by others</i>	2	0.60

Annex 7 Personal Hygiene Practice

Personal Hygiene		Frequency	Percentage
Bathing after work (Weekly)	<i>Less than 7 times</i>	78	23.28
	<i>7 times</i>	241	71.94
	<i>7 to 14 times</i>	15	4.48
	<i>More than 14 times</i>	1	0.30
Washing working cloths (Weekly)	<i>Less than 7 times</i>	142	42.39
	<i>7 times</i>	191	57.01
	<i>More than 14 times</i>	1	0.30
Using antiseptic while washing working cloths (Weekly)	<i>None</i>	1	0.30
	<i>Regular (7 times)</i>	93	27.76
	<i>Irregular (Less than 7 times)</i>	89	26.57
Washing hands with antiseptic (Weekly)	<i>None</i>	153	45.67
	<i>Irregular (Less than 28 times)</i>	237	70.75
	<i>Regular (Up to 56 times)</i>	14	4.18
	<i>Very Frequently (More than 56 times)</i>	1	0.30
Wearing Mask during work (Weekly)	<i>None</i>	83	24.78
	<i>Regular (7 times)</i>	2	0.60
	<i>Irregular (3 days)</i>	1	0.30
	<i>None</i>	332	99.10

Wearing boots/shoes during work (Weekly)	<i>Regular (7 times)</i>	1	0.30
	<i>Irregular (3 days)</i>	2	0.60
	<i>None</i>	332	99.10
Wearing gloves while working (Weekly)	<i>Irregular (Less than 7 days)</i>	2	0.60
	<i>None</i>	333	99.40

Annex 8 Prevalence of physical Abuse

Abuse	Never	Yes, once	Yes, a few times (irregular)	Yes, multiple times (often)
<i>Slapped or punched</i>	266 (79.40%)	19 (5.67%)	44 (13.13%)	6 (1.79%)
<i>Thrown something</i>	324 (96.72%)	4 (1.19%)	5 (1.49%)	2 (0.60%)
<i>Kicked</i>	317 (94.63%)	7 (2.09%)	8 (2.39%)	3 (0.90%)
<i>kept standing or kneel down</i>	330 (98.51%)	1 (0.30%)	4 (1.19%)	-
<i>Burnt as punishment</i>	334 (99.70%)	1 (0.30%)	-	-
<i>Took food away</i>	333 (99.40%)	1 (0.30%)	1 (0.30%)	-
<i>Done anything else to hurt</i>	323 (96.42%)	3 (0.90%)	7 (2.09%)	2 (0.60%)

Annex 9 Prevalence of punishments and threats

Punishments and threats	Frequency (n=335)	Percentage
If Punished (at least once)	<i>Yes</i>	51 15.22
	<i>No</i>	284 84.78
Punishments (Multiple Responses)	<i>Constantly shouted at</i>	129 38.51
	<i>Repeatedly insulted</i>	122 36.42
	<i>Beaten /physically hurt</i>	40 11.94
	<i>I haven't been abused</i>	168 50.15
	<i>Salary deduction</i>	1 0.30
	<i>Forced by recruiter to rejoin the work</i>	1 0.30
	<i>Got threats</i>	70 20.90
Got threats from (Multiple Responses)	<i>No</i>	265 79.10
	<i>Parents</i>	4 1.19
	<i>Other family member</i>	5 1.49
	<i>Employer</i>	25 7.46
	<i>An adult colleague</i>	43 12.84
	<i>Another child colleague</i>	5 1.49
	<i>local leaders</i>	2 0.60
<i>Unknown community people</i>	27 8.06	

Annex 10 Knowledge about PPE

Knowledge about PPE (Multiple Responses)	Frequency	Percent of cases
<i>Wearing gloves</i>	226	67.46
<i>Wearing mask</i>	188	56.12
<i>Wearing rubber shoes</i>	211	62.99
<i>Wearing apron</i>	97	28.96
<i>Wearing apron can prevent microbial infection</i>	50	14.93
<i>Having shower after work can protect from diseases</i>	237	70.75
<i>Working with clean dress prevents from skin diseases</i>	194	57.91
<i>Changing dress after work</i>	195	58.21
<i>Do not know about any PPE</i>	33	9.85

Annex 11 Opinion about own health condition

Opinion about own health condition	Frequency (%)
Very good	12 (3.58%)
Good	167 (49.85%)
Moderate	104 (31.04%)
Poor	49 (14.63%)
Very poor	3 (0.9%)
Total	335 (100%)

Annex 12 Musculoskeletal Problems

Musculoskeletal	Frequency	Frequency (%)
Neck	206	206 (61.49%)
Shoulder	211	211 (62.99%)
Elbow	62	62 (18.51%)
Wrist/Hand/Finger	193	193 (57.61%)
Upper side of the back	74	74 (22.09%)
Lower side of the back	184	184 (54.93%)
Thighs	28	28 (8.36%)
Knee	143	143 (42.69%)
Ankle/Feet	142	142 (42.39%)
No Musculoskeletal Problem	30	30 (8.96%)

Annex 13 Health Problems

Health problems in last 12 months (Multiple Responses)	Frequency (%)
Respiratory Problems	176 (52.53%)
<i>Wheezing/Whistling in chest</i>	22 (6.57%)
<i>Sleep been disturbed due to wheezing (Bronchial Asthma)</i>	27 (8.06%)
<i>Wheezing severe enough to limit speech</i>	66 (19.7%)
<i>Asthma (Self-reported)</i>	7 (2.09%)
<i>Chest sounded wheezy during or after workout/exercise</i>	8 (2.39%)
<i>Dry cough at night</i>	121 (36.12%)
Skin Problems	308 (91.94%)
<i>Itching and rash</i>	191 (57.01%)
<i>Sores with pus</i>	28 (8.35%)
<i>Blisters</i>	163 (48.65%)
<i>Calluses</i>	201 (60%)
<i>Nail problems</i>	148 (44.17%)
<i>Lice</i>	67 (20%)
<i>Scabies</i>	11 (3.28%)
<i>Sand flea bites</i>	9 (2.68%)
<i>Myiasis, human botfly infection</i>	2 (0.59%)
<i>Shingles</i>	56 (16.71%)
<i>Marks on the skin accompanied by numbness</i>	40 (11.94%)
General Health Problems	226 (67.46%)
<i>Chronic fever</i>	83 (24.77%)
<i>Chronic heart disease</i>	2 (0.59%)
<i>Diarrhea</i>	47 (14.02%)
<i>Gastric/ulcer</i>	169 (50.44%)
<i>Arthritis</i>	22 (6.56%)
<i>Migraine</i>	4 (1.19%)
Total	1265 (377.61%)

Occupational Injury:

Annex 14 Prevalence of Injury

Injury in last 12 months	Frequency	Percent of cases
<i>Cut</i>	261	77.91
<i>Puncture wound</i>	52	15.52
<i>Hit/bruise</i>	30	8.96
<i>Burn</i>	2	0.6
<i>Graze / wound</i>	8	2.39
<i>Breakage / fracture</i>	4	1.19
<i>Loss of limb / amputation</i>	4	1.19
<i>Did not get injured</i>	53	15.82

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