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Livelihood Status and Health Condition of Waste Pickers in Sylhet City Corporation: A Study

Krittebas Paul[†*] and Priyanka Bhattacharjee[†]

Abstract

Urban poor are engaged in waste picking in the city areas of Bangladesh, as it requires no skills and experience. Though several studies have been conducted on waste management, the livelihood of waste pickers remains unexplored. So, this study has been undertaken to investigate the livelihood and health status of the informal waste pickers living in the Sylhet City Corporation, Bangladesh using the five capitals of the sustainable livelihood framework. To achieve the study objectives, at first, purposively selected one hundred waste pickers were surveyed. Then, to substantiate quantitative data gathered by the survey, ten in-depth interviews and a focus group discussion (FGD) were conducted. This study found that the vulnerabilities of waste pickers in the city area are the consequences of their poor education and lack of skills, lower earnings, miserable living and working conditions, lower social status, and no access to social services. In addition, they face chronic injuries and occupational health risks, but they are not aware of this. As a result, they cannot maintain a standard of living through their efforts. So, Government and non-government organisations should recognise their contribution and take necessary steps for improving their livelihood and health status.

Keywords: Waste Pickers; Sustainable Livelihood Approach; Health Condition; Sylhet; Bangladesh.

[†] Assistant Professor, Department of Social Work, Shahjalal University of Science and Technology, Sylhet, Bangladesh
[*]Corresponding Author, email: krittebas-scw@sust.edu

Introduction

Due to rapid urbanisation and industrialisation, a staggering amount of waste are produced throughout the world (Ashikuzzaman and Howlader, 2020). To be precise, on average, 3.5 million tons of plastic and other solid wastes are on a day by the living planet, which is ten times higher when compared to a century ago (Leahy, 2018). But different waste management systems are found in developed and developing countries. Developed countries adopted modern waste management systems, while many developing countries are grappling with trash disposal (Guerrero et al., 2013,). In most developing countries, many people are dependent on garbage to earn their livelihood; this group of people is called waste pickers. Throwing substances became valuable resources for this group of people (Kaza et al., 2018; Schenck et al., 2019). Although this waste recovery system is labour intensive, it provides many new immigrants and poor people in urban areas with a livelihood (Ojeda-Benitez et al., 2002). Bangladesh is a developing country where the population growth rate is 1.37% (Bangladesh Bureau of Statistics, 2019); this vast population is considered a prime reason for producing a large volume of waste (Rahman, 2017). Despite the Government of Bangladesh's and non-governmental organisations' (NGOs) efforts, vast amounts of rubbish remain uncollected in urban areas (Ahsan et al., 2014). So, many poor people migrate from rural areas to urban areas to engage in waste collection activities informally (Yasmin and Rahman, 2017). But the waste collection is considered inhumane and shameful in Bangladesh, and waste pickers belong to the bottom layer of the waste management system (Uddin et al., 2020).

The waste collection scenario is the same in every city of Bangladesh. Sylhet is the largest city in the northeast of Bangladesh, which has more than half a million people (Ahmed and Rahman, 2000). The usable secondary disposal sites and one final disposal site in Sylhet City Corporation have been marked by inadequate health and safety measures. Waste pickers are engaged in collecting garbage from these sites, but local laws do not acknowledge their contribution to the waste management system. So they are excluded from different facilities and services available for city dwellers (Ahsan et al., 2014).

Though a significant number of studies highlights the solid waste management system (notably Ashikuzzama and Howlader, 2020; Yasmin and Rahman, 2017; Ahsan et al., 2014), there has been a very little focus on the human part of waste management, particularly in the context of Bangladesh (Uddin et al., 2020). The present study has been taken based on the above context. Furthermore, achieving one of the Sustainable Development Goals(SDGs) titled sustainable cities and communities and moving forward the country's economy requires bringing about all informal workers, including waste pickers, into the mainstream of the development process. It can only be done by recognising them as a part of the formal economy and improving their living standard after studying their livelihood and health condition. Therefore, the study aims to explore waste pickers' livelihood and health status working informally in the Sylhet City Corporation, Bangladesh.

To achieve the aim, the study focuses on:

- To find out the socio-demographic condition of waste pickers' life,
- To describe the livelihood assets and livelihood strategies of waste pickers living in Sylhet City Corporation,
- To analyse the health status of waste pickers.

The rest of this paper is organised in the following structure. The study begins with a review of the literature relevant to the life and livelihood of waste pickers. Then, it describes the methodology and research findings, followed by a discussion. Finally, before concluding, the study includes a description of the noble contribution of the current study.

Literature Review

The presence of the informal sector is a significant part of the waste recovery and recycling system in developing countries (Ojeda-Benitez et al., 2002). The expenditure of a city's solid waste management (SWM) system is minimised by informal waste picking (Medina, 2000). According to Carenbauer (2021), waste picking is a human part of the waste that includes people irrespective of sex and age engaged in the activities.

Informal waste collection is a vital source of livelihood for the urban poor (Dias, 2016). Waste pickers who work informally belong to the lower class in society and the recycling network (Gutberlet and Baeder, 2008). They could not sell their product directly and are dependent on mediators who paid a minimal amount to them (WIEGO, 2013). Medina (2005) also found that many municipalities in Mexico have unfavourable attitudes toward waste pickers. Kagan and Scott-Roberts (2002) stated that marginalised people have very little control over their lives and the possessions available to them; they may be stigmatised and often have negative public opinions regarding themselves.

Medina (2000) found that the waste pickers from Asia, Africa and Latin America are the most vulnerable and unrecognised workers. Carenbauer (2021) finds similar findings in his recent study that waste pickers are the victims of unfair treatment and hazardous working conditions. Taking into account their precarious conditions, Rahman et al. (2017) explained how waste picking becomes accessible for the urban poor; they found that there are lower barriers to entry; education and capital requirements are not mandatory, so many of them choose waste picking as their way of living. Similarly, Wilson et al. (2006) examined the general nature of informal recycling, and they argued that the health and social problems are connected with informal recycling. In the Gaza strip and other countries, including South Africa, waste pickers' occupational health and safety mostly decline because of the informal nature of their jobs (Al-Khatib et al., 2020; Dias, 2012; Kistan et al., 2020; Omotoso, 2017; Ojeda-Benitez et al.,2002). These studies show that the local decision-makers take short-term and long-term steps to improve the disadvantaged social community's health and safety status in the waste management sector. These studies also unveil that people who work in the informal economy are usually unable to organise and resolve their problems through an organisation and cannot save money. The findings bear resonance to the observation of Mothiba et al. (2017) at the landfill sites in the Tshwane Metropolitan Municipality, who argues that no association at the landfill sites are working to improve the working conditions of the waste pickers and raise awareness of their health status despite their significant contribution to the recovery and recycling process.

We argue that although many researchers have focused on various aspects of waste pickers' life and livelihood conditions, very few emphasise the livelihood strategies (notably Uddin et al., 2020 and Schenck et al., 2018).

There are various techniques to describe livelihood strategies; among these, the Sustainable Living Approach (SLA) is vital. The five types of SLA capital assets are financial, physical, natural, social and human (Department for International Development, 1999). It also incorporates critical facets of poverty, such as insecurity and social exclusion, reflects on the livelihoods of the disadvantaged or weak, and begins to examine the existing livelihood processes of people to recognise and develop effective interventions relevant to the context of the issue at hand (Krantz, 2001). Livelihood strategies are the diversity of practices and choices people make to achieve their livelihood objectives (Krantz, 2001). Tobin et al. (1989) identified eight strategies to cope with one's livelihood situation: problem-solving, cognitive restructuring, emotional expression, social support, problem avoidance, wishful thinking, self-criticism, and social withdrawal.

Plugging of Previous SLF Research Gap

Uddin et al. (2020) conducted a study on waste pickers in Dhaka city of Bangladesh by adopting the SLF. They found that the waste collectors contributed to building a healthy city but are in

deep poverty and neglect. This study was based only on the health of these workers and considered health as the key to achieving sustainable livelihoods. But it did not consider other important factors of sustainable livelihoods, such as education, knowledge, skill, social relationship and environment. Schenck et al. (2018) conducted a study using the SLF of the livelihoods of landfill waste pickers in South Africa. He found that the high levels of unemployment in South Africa have engaged many people to work in the informal sector. Despite the difficulties of living in unbearable working conditions and low income, landfill waste pickers have maintained their livelihoods. The study recommended that it is crucial to incorporate waste pickers into the waste management system but not formalise or control them because formal structure depends only on documentation and process rather than working independently. But the main limitation of this study was that it only focused on landfill workers in South Africa and did not consider other categories of waste pickers. We argue that in Bangladesh, a study on waste pickers deploying SLF can present many aspects of waste pickers. Hence, our study attempts to fill in the literature gap by including waste pickers working in landfills and other dumping sites. In addition, the study analyses the livelihood and health conditions of the waste pickers.

Methodology

This is an exploratory study based on a qualitative interpretation. The qualitative research aims to present the participants' real-life situations in the form of narratives (Ahmmed and Hossain, 2016). For this study, which was conducted in the Sylhet city corporation area, we have used two stages (2-Stage) sampling method to draw the sample.

In the first Stage, Sylhet city was divided into five clusters based on incinerator and landfill, namely Shahi Eidgah point, Tilagarh point, Rikabibajar point, Uposhohor point (main road), and South Surma landfill site where the concentration of waste pickers was supposed to be high. Then, twenty respondents were selected from each cluster (totalling 100) using an accidental sampling procedure to survey waste pickers' socio-demographic conditions.

In the second stage, two respondents from each cluster (ten respondents) were selected purposively for in-depth interviews, and a Focus Group Discussion (FGD) was held with different stakeholders of waste picking activities. Interviews and FGD were conducted using two different checklists. The time and place for each interview were chosen based on respondents' consent. Bangla language was used during data collection and then translated into English for analysis (Das et al.,2016).

Survey data were analysed using simple statistical techniques. Data from in-depth interviews and FGDs were analysed thematically according to the SLF. At first, codes were developed— vulnerabilities, natural capital, social capital, human capital, physical capital and financial capital, livelihood strategies. Then, five themes were developed using these codes, where the narratives of the waste pickers were presented and critically analysed.

Major Findings

Socio-demographic Profile of the Waste Pickers

The socio-demographic profile of the waste pickers is presented in Table 1. The study found that the male population has dominated the waste picking occupation as more than two-thirds (70%) of the participants are male. In addition, they belong to different age categories, though about half of them (40%) are between the 35-44 age group. The study has also revealed that most waste pickers (65%) have no education, which compelled them to choose the occupation. Almost all the waste pickers (98%) are migrants from rural areas where poverty is high. However, only two waste pickers are found to have been born in the Sylhet district. Their earnings vary from one hundred takas to five hundred takas and more per day. Most of the respondents (70%) are married, and 79% have a nuclear family. In terms of religion, waste pickers are unevenly distributed between Muslims and Hindus.

Table 1: Socio-demographic Profile of the Waste Pickers			
Socio-demographic Features	**Frequency**		**Percentage**
Sex			
Male	**70**		**70%**
Female	**30**		**30%**
Age(years)	**Male**	**Female**	
15-24	**10**	**5**	**15%**
25-34	**12**	**5**	**17%**
35-44	**28**	**12**	**40%**
45-54	**15**	**4**	**19%**
55-64	**5**	**4**	**9%**
Educational Qualification			
Illiterate	**65**		**65%**
Completed primary education	**32**		**32%**
Completed Secondary education	**3**		**3%**
Earnings per day (BDT.)			
100-199	**20**		**20%**
200-299	**27**		**27%**
300-399	**25**		**25%**
400-499	**21**		**21%**
500-500+	**7**		**7%**
Marital Status			
Married	**70**		**70%**
Unmarried	**20**		**20%**
Divorced	**10**		**10%**
Patterns of family			
Nuclear	**79**		**79%**
Joint	**21**		**21%**
Place of origin			
Kishorganj	**33**		**33%**
Sirajganj	**22**		**22%**
Netrokona	**19**		**19%**
Barishal	**17**		**17%**
Faridpur	**7**		**7%**
Sylhet	**2**		**2%**
Source: Field Survey			

Vulnerabilities of Waste Pickers

Insufficient Basic Service for Their Living

Most of the waste pickers live on the edge of the city— the slums where they live have no access to safe drinking water and proper sanitation system; they do not have a hygienically good place to live in and have meals; neither do they have electricity and gas facilities for cooking. In addition, there are no primary schools and primary health care centres in their slums. They express their anger as follows:

> We are not gentlemen living in high rise buildings, so we don't have any essential services for our living.
>
> We are living like wild animals. As a result, we are useless in society.

Waste Picking is Nothing but an Activity of the Struggle for Survival

People involved in waste picking face more challenges as the dumping site is full of toxic wastes and produces a foul smell. Waste pickers begin their work in the early morning, and after taking a small lunch break in the site, they continue until sunset. They work all day long facing the risks of health hazards and show a lack of concern about using protective tools while collecting waste. A respondent stated:

> Purchasing preventive tools like gloves, masks, and shoes needs money, but I have no money to buy these things. What I earn every day fails to fulfil my basic needs.

Another respondent shared:

> We need to work on heavy rainy days and sunny days too. There is no shade house in the dumping site where we can stay during unfavourable weather conditions.

Sexual Harassment is a Regular Occurrence at the Sites

Sexual abuse has been encountered on landfill sites as a common occurrence, particularly among younger and middle-aged women. For example, one of the respondents of the FGD said:

> This environment is not suitable for women, especially for teenage girls. They became the victims of rape and sexual harassment by different male people on this site.

This finding is similar to the many studies (notably Wittmer, 2021) where women face sexual assaults at the workplace.

Livelihood Assets

Five capitals of SLF are described under different themes:

Human Capital

Poor Education and Poverty are Common Features of Waste Pickers

Most waste pickers are illiterate, and they are not aware of their children's education. They thought that their children should assist them during peak season instead of going to school. A respondent commented:

> Only education could not manage our meals three times a day. We need to work. We are poor, so daily earning is more important than education.

We argue that poverty is the critical barrier preventing the children of the waste pickers from attending school.

Unskilled Waste Pickers have no Scope for Skill Development

As waste picking is a quickly learned job and does not require any technical and vocational skills, the migrants from rural areas choose waste picking as a means of livelihood in urban areas. They said:

> We applied for some other jobs, but employers refused us because of our lack of skills and experience.
>
> There are some training centres in the city area, but it needs a lot of money to be trained

Social Capital

Support from their Families during Waste Collection

Waste pickers prefer to bring their family members to collect and sell waste as adding a family member increases their efforts to collect more recyclable materials and securely store them.

One of the waste pickers said:

> We three members, including my wife and a daughter, collect, clean, and segregate waste in the dumping site and store it for sale. Besides, when I go to a scrap dealer, my family members work in the dumping site, and I can choose a buyer who gives a better price for our waste.

Conflict among Waste Pickers' Groups is Visible at the Work Sites

The FGD's participants described that waste pickers form small groups based on their place of

origin, gender, and neighbourhood. Group members help each other at their workplace. But intergroup conflict is common among waste pickers at dumping and landfill sites for competition over resources, jealousy, personality conflicts, cultural variation, substance abuse, etc.

One participant described:

> Different groups in a landfill site are often getting engaged in conflict; they use threats and aggressive language. Sometimes they become violent and then use fists and stick for the attack.

The Public Impose Stigma on Waste Pickers because of their Occupation

Waste pickers contributed to society by collecting waste from public places, market yards, roadside areas, etc. But they have been neglected by the mainstream community, and often they are harassed by the law enforcement agency.

They expressed their frustration as follows:

> Sometimes people screamed at us as 'thief' when we entered a residential area to collect waste. Some waste collectors stole other utensils, but everybody is not a thief. Police thought we were drug peddlers and drug addicts.
>
> Some women of our community lost their jobs as maidservants when their employer came to know they were from the waste pickers' community.

Physical Capital

Struggling Life within a Single Room

Compared to their earnings, accommodation in the slum of Sylhet City Corporation is costly. Most of them rent a single room they share with their families, where maintaining privacy is difficult. They need to cook in this room; sometimes they store collected waste too in the same room. As some participants shared:

> We are five members, and we have only one room to stay in the slum. We hang a curtain to separate our bed from the children at night to manage our privacy. Even we need to store our collected waste in this small room.

No Vehicles for Collecting Waste

There is no vehicle for going to the dumpsite. The dumping site is more than three kilometres away from the living place of waste pickers. They generally walk to the dumping site. They sometimes hire a vehicle to carry their collected things, but it depends on the weight of the trash. As waste pickers said:

> We go to the landfill by walking. We hire rickshaws for taking our heavy accumulated products at our home.

Natural Capital

Waste is Detrimental to both Humans and Nature

Sylhet City Corporation has a dumping site far from the living area. But due to the scarcity of modern waste management and environmental services, gathered waste pollutes land and water and negatively affects biodiversity. In addition, burned waste often contaminates the air with toxic fumes that lead to human respiratory illnesses. As FGD participants said:

> Waste is increasing day by day, which covers a large area and destroys land fertility.
>
> Smoke from waste burning pollutes the air; it creates suffocation amongst people

Financial Capital

Waste Collections Vary Seasonally, and the Price also Varies on the Amount of Waste Collected

Waste pickers sometimes face challenges in selling the wastes. They sell the wastes to a collector or a middleman appointed by the scrap dealers. The respondents said that recyclable waste varies seasonally, especially when the price goes down in the rainy season as they cannot store enough waste.

One participant said:

> The price of waste depends on the amount of waste collected. Whenever I go to a scrap dealer with a small bag or a

> few bags of waste, the dealer does not show interest in buying it but sympathises and pays the price as he wishes.

No Other Job Opportunities for Waste Pickers

Waste pickers remain busy the whole day in this work and have no weekly holidays. Our research respondents had failed to start any small business with micro-credits or loans. As some of the respondents stated:

> After a whole day's tiredness, I could not do any other jobs to support my family.

> As we are living in a slum area, the NGOs do not offer any loans to us.

Spending Earnings on Smoking, Drinking, and Betel Leaves

Almost all the waste pickers either smoke or chew betel leaves. They argued that it helps avoid the foul smell and prevent vomiting tendency. Regarding the chewing of betel nuts, the comments of the participants were similar:

> I cannot spend a single day without betel leaves.

> Taking food is not mandatory for me, but betel leaves are a must.

Participants of the FGD said drinking is a popular habit among waste pickers. They remain busy managing alcohol for them rather than managing foods for their families. But when they were being asked about this, there were no responses.

Health Status of Waste Pickers

Unaware of their Simple Injury, which Turns into a Significant Physical Threat

As the working sites for the waste pickers are hazardous, they generally get wounded at their worksites for various reasons— broken pieces of glasses, infected needles, and medical wastes, but they depend on traditional self-treatment methods. However, they abstain from visiting medical centres and doctors mainly due to financial problems. They said:

> Cutting is normal in our occupation, so we don't take it seriously.

> We cannot afford the treatment cost, so we don't go to the doctor for a single cut. But, if it turns serious, we take that person to the hospital.

Their Living Area is the Birthplace of Infectious Disease

Waste pickers live in a densely populated area that is considered the home of different communicable diseases. Most waste pickers and their children who work to dispose of the garbage eat without washing their hands and often suffer from diarrhoea and illness due to unhealthy conditions. As a result, diarrhoea, fever, cough, and skin infections are common in their community. Sometimes these diseases turn into an epidemic. They opined:

> Some seasonal diseases are common in our area. Again, our living environment is responsible for this.

Discussion

This study has unfolded that waste collection is not a hereditary business. However, lack of skills and jobs with poor education and migration to a new city coerce them to choose this occupation. These findings validate the observations of Rahman et al. (2017) and Schenck et al. (2018), who also found that unemployment, lack of education, money and skills push them in these activities. Despite many barriers such as seasonal factors, clashes and harassment at the dumping sites, stigma, poor income, beneficiaries' intermediaries, occupational health hazards (Uddin et al., 2020) they are still doing their job. As most of them are unaware of their own life, the future of their next generation is uncertain too. Poor health outcomes among waste pickers explain their incapacity to clear environmental trash, which leads to an increase in disease spread in the wider population. (Kistan et al., 2020; Uddin et al., 2020). Besides, the city corporation authority does not recognise their contribution, and the Government and non-government organisations take no special facilities for them. No internal organisation is there to send their demands to the appropriate authority. So, it can be argued that the livelihood outcome of waste pickers in Sylhet City

Corporation became vulnerable because of insufficient assets. Moreno-Sanchez and Maldonado (2006) found that informal waste pickers are deprived of elementary social services such as protective tools, economic support, and health care facilities in developing country. Dias (2012) proposed an organisation for waste pickers that help better represent policies. This study suggests local governments should recognise waste pickers' contribution and take necessary steps to improve their livelihoods. Because waste picking is an occupation to deal with the trash and keep the city clean, responsible authority can make this sector attractive for many unemployed people of Bangladesh.

What this study adds

Waste pickers save the massive cost of recycling work in the city corporation, but they live in poverty and have poor health. City dwellers also deny their contributions that play a significant role in making the city environment clean.

They clean others' living areas, but they remain in unhealthy living conditions and enjoy poor health facilities. Meeting their daily basic needs with a minimum income is their prime focus. They are representative of a vulnerable group in the city area. Benjamin (2007) also found that waste pickers are considered the most vulnerable in Bangladesh's poor waste management system.

Using SLF, this study identifies the vulnerabilities of waste pickers and their livelihood strategies living in the Sylhet City Corporation. Different factors such as poverty, lack of education, skills, and migration to a new place are responsible for their weak condition. Among eight coping mechanism strategies (Tobin et al., 1989), they follow problem avoidance techniques. They know the reason for their poor condition but do not take any action to improve their situation, only blame their luck for their circumstances. Such as, they have the basic skills to start a new business, but they do not seek any support from anywhere. They prefer daily casual occupations where they can work according to their wish. Although they express grief for treating them differently, they are used to this lifestyle in reality.

Conclusion

This study aimed at probing the livelihood status and health conditions of the waste pickers in Sylhet City Corporation. Despite the significant contribution of waste pickers to the waste management system, the study finds vulnerable livelihood conditions and poor health status prevailing among them in the Sylhet City Corporation area. Though waste pickers admit their poor conditions, they adopt a problem avoidance strategy for their living. They have limited or no access to mainstream communities and their assets. Thus, assets such as learning technical skills, getting access to social service and financial assistance, receiving social support from neighbouring communities, managing standard places to live, building cooperatives for strengthening waste picking business, and using technology at the workplace will be helpful strategies to improve their life. The Government should make an appropriate policy for them, and the City Corporation should determine adequate salary and incentive provisions. In addition, further comprehensive studies can be initiated focusing on the marginalisation and social exclusion of waste pickers as the study lacks adequate data about their exclusion and economic vulnerability.

References

Ahmed, M. F., & Rahman, M. M. (2000). Water Supply and Sanitation: Rural and low-income urban communities, ITN-Bangladesh. *Center for water supply and waste management, BUET, Dhaka, Bangladesh*, 191-195.

Ahmmed, F. & Hossain, M. (2016). A Study Report on Working Conditions of Tea Plantation Workers in Bangladesh. *ILO Country Office for Bangladesh*, Dhaka. http://www.ilo.int/wcmsp5/groups/public/---asia/---ro-bangkok/---ilo-dhaka/documents/publication/wcms_563692.pdf

Ahsan, A., Alamgir, M., El-Sergany, M., Shams, S., Rowshon, M., & Daud, N. (2014). Assessment of Municipal Solid Waste Management System

in a Developing Country. *Chinese Journal Of Engineering*, *2014*, 1-11. https://doi.org/10.1155/2014/561935.

Al-Khatib, I., Al-Sari', M., & Kontogianni, S. (2020). Assessment of Occupational Health and Safety among Scavengers in Gaza Strip, Palestine. *Journal Of Environmental and Public Health*, *2020*, 1-9. https://doi.org/10.1155/2020/3780431.

Ashikuzzaman, M., & Howlader, M. (2020). Sustainable Solid Waste Management in Bangladesh. *Advances in Environmental Engineering and Green Technologies*, 35-55. https://doi.org/10.4018/978-1-7998-0198-6.ch002.

Bangladesh Bureau of Statistics.(2019).

Bangladesh Statistics 2019. https://bbs.portal.gov.bd/sites/default/files/files/bbs.portal.gov.bd/page/a1d32f13_8553_44f1_92e6_8ff80a4ff82e/2020-05-15-09-25-dccb5193f34eb8e9ed1780511e55c2cf.pdf

Benjamin, S. (2007). *Rapid assessment on scavenging and waste recycling work by children in South Africa*. Department of Labour and International Labour Organisation (ILO), Pretoria, South Africa. https://www.academia.edu/3546866/A_Rapid_Assessment_of_Scavenging_and_Waste_Recycling_Work_by_Children_in_South_Africa

Carenbauer, M. (2021). Essential or dismissible? Exploring the challenges of waste pickers in relation to COVID-19. *Geoforum*, *120*, 79-81. https://doi.org/10.1016/j.geoforum.2021.01.018

Das, T. K., Bhattacharyya, R., Alam, M. F., & Pervin, A. (2016). Domestic violence in Sylhet, Bangladesh: Analysing the experiences of abused women. *Social change*, *46*(1), 106-123. https://doi.org/10.1177/0049085715618561

Department for International Development. (1999). *Sustainable livelihoods guidance sheets*. https://www.ennonline.net/attachments/871/dfid-sustainable-livelihoods-guidance-sheet-section1.pdf

Dias, S. (2012). Not to be taken for granted: What informal waste pickers offer the urban economy. *The Global Urbanist*. http://globalurbanist.com/2012/11/27/waste-pickers

Dias, S.M. (2016). Waste pickers and cities. *Environment and Urbanisation*, 28(2), 375–390. https://doi.org/10.1177%2F0956247816657302

Gutberlet, J., & Baeder, A. (2008). Informal recycling and occupational health in Santo André, Brazil. *International Journal Of Environmental Health Research*, *18*(1), 1-15. https://doi.org/10.1080/09603120701844258

Guerrero, L. A., Maas, G., & Hogland, W. (2013). Solid waste management challenges for cities in developing countries. *Waste Management*, *33*(1), 220-232. https://doi.org/10.1016/j.wasman.2012.09.008

Kagan, C. & Scott-Roberts, S. (2002). *Family based intervention for children with Cerebral Palsy and their inclusion in the community project from the perspectives of occupational therapy and community psychology*. [online] https://e-space.mmu.ac.uk/id/eprint/24637

Kaza, S., Yao, L., Bhada-Tata, P., & Van Woerden, F. (2018). *What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050*. Washington, DC: World Bank. https://openknowledge.worldbank.org/handle/10986/30317

Kistan, J., Ntlebi, V., Made, F., Kootbodien, T., Wilson, K., Tlotleng, N., Kgalamono, S., Mathee, A., & Naicker, N. (2020). Health care access of informal waste recyclers in Johannesburg, South Africa. *PLOS ONE*, *15*(7), e0235173. https://doi.org/10.1371/journal.pone.0235173

Krantz, L. (2001). *The sustainable livelihood approach to poverty reduction.* SIDA.[online] https://www.sida.se/contentassets/bd474c210163447c9a7963d77c64148a/the-sustainable-livelihood-approach-to-poverty-reduction_2656.pdf

Leahy, S. (2018, May 18). "*How People Make Only a Jar of Trash a Year"*. National Geographic. https://www.nationalgeographic.com/science/article/zero-waste-families-plastic-culture

Medina, M. (2000). Scavenger cooperatives in Asia and Latin America. *Resources, Conservation and Recycling*, 31(1),51–69. https://doi.org/10.1016/S0921-3449(00)00071-9

Medina, M. (2005). Serving the unserved: informal refuse collection in Mexico. *Waste Management & Research: The Journal For A Sustainable Circular Economy*, *23*(5), 390-397. https://doi.org/10.1177/0734242x05057698.

Moreno-Sanchez, R., & Maldonado, J. (2006). Surviving from garbage: The role of informal waste-pickers in a dynamic model of solid-waste management in developing countries. *Environment and Development Economics, 11*(3), 371-391. https://doi.org/10.1017/S1355770X06002853

Mothiba, M., Moja, S., & Loans, C. (2017). A Review of the Working Conditions and Health Status of Waste Pickers at Some Landfill Sites in the City of Tshwane Metropolitan Municipality, South Africa. *Advances in Applied Science Research,* 8(3), 90-97. http://www.dust-monitoring-equipment.com/Mathema%20Mothiba%20Published%20article.pdf

Ojeda-Benitez, S., Armijo-de-Vega, C., & Ramírez-Barreto, M. (2002). Formal and informal recovery of recyclables in Mexicali, Mexico: Handling alternatives. *Resources, Conservation and Recycling*, *34*(4), 273-288. https://doi.org/10.1016/s0921-3449(01)00105-7

Omotoso, K. (2017). Informal waste recycling activities: Implications for livelihood and health. *African Journal Of Science, Technology, Innovation and Development*, *9*(6), 785-793. https://doi.org/10.1080/20421338.2017.1380584

Rahman, M.Z., Siwar, C. & Begum, R.A.(2017). Achieving Sustainable Livelihood Through Solid Waste Management in Dhaka City. *International Journal of GEOMATE*, *12*(30), pp.19-27. http://dx.doi.org/10.21660/2017.30.160618

Rahman, M. A. (2017). E-waste management: A study on legal framework and institutional preparedness in Bangladesh. North South University. http://www.northsouth.edu/newassets/files/ppgresearch/PPG_5th_Batch/14.Anis_E-waste_Management. Pdf.

Schenck, C., Blaauw, P., Swart, E., Viljoen, J., & Mudavanhu, N. (2018). The management of South Africa's landfills and waste pickers on them: Impacting lives and livelihoods. *Development Southern Africa*, *36*(1), 80-98. https://doi.org/10.1080/0376835x.2018.1483822

Schenck, C.J., Blaauw, P.F., Viljoen, J.M. & Swart, E.C. (2019). Exploring the Potential Health Risks Faced by Waste Pickers on Landfills in South Africa: A Socio-Ecological Perspective. *International Journal of Environmental Research and Public Health*, 16(11),2059. https://doi.org/10.3390/ijerph16112059

Tobin, D., Holroyd, K., Reynolds, R., & Wigal, J. (1989). The hierarchical factor structure of the coping strategies inventory. *Cognitive Therapy and Research*, *13*(4), 343-361. https://doi.org/10.1007/bf01173478.

Uddin, S., Gutberlet, J., Ramezani, A., & Nasiruddin, S. (2020). Experiencing the Everyday of Waste Pickers: A Sustainable Livelihoods and Health Assessment in Dhaka City, Bangladesh. *Journal of International Development*, *32*(6), 833-853. https://doi.org/10.1002/jid.3479

Wiego.org. (2013). *Waste Pickers: The Right to Be Recognized as Workers*. https://www.wiego.org/sites/default/files/resources/files/WIEGO-Waste-Pickers-Position-Paper.pdf.

Wilson, D., Velis, C., & Cheeseman, C. (2006). Role of informal sector recycling in waste management in developing countries. *Habitat International*, *30*(4), 797-808. https://doi.org/10.1016/j.habitatint.2005.09.005

Wittmer, J. (2021). "We live and we do this work": Women waste pickers' experiences of wellbeing in Ahmedabad, India. *World*

Development, 140, 105253. https://doi.org/10.1016/j.worlddev.2020.105253

Yasmin, S. & Rahman, M.I. (2017). A Review of Solid Waste Management Practice in Dhaka City, Bangladesh. *International Journal of Environmental Protection and Policy*, *5*(2), 19. https://doi.org/10.11648/j.ijepp.20170502.11

Conflict of Interest Statement

The authors of this article declare that there is no conflict of interest in relation to the research, authorship, and publication of this article.

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About the Authors

Krittebas Paul is an Assistant Professor in the Department of Social Work, Shahjalal University of Science and Technology (SUST), Sylhet, Bangladesh. Mr Paul completed BSS (Honours) and MSS in Social Work from the SUST, and now he is doing MSC International Project Management with Advanced Practice at Northumbria University, UK. He has already published a number of articles, book chapters and presented papers at national and international conferences. Mr Paul has a passion for research and conducted several research projects. His research interests span social services, informal workers, disability, working parents, etc. ORCID ID: https://orcid.org/0000-0002-4090-2856

Priyanka Bhattacharjee is working as an Assistant Professor at the Department of Social Work, Shahjalal University of Science and Technology (SUST), Sylhet, Bangladesh. She completed Undergraduate and Graduate degrees (securing the first position) in Social Work from Shahjalal University of Science and Technology, Sylhet. She also achieved a Master's degree in international project management from Northumbria University, Newcastle, UK. Her research interests are Government and non-government social services, social development, informal workers and other disadvantaged groups, and gender inequality. ORCID ID: https://orcid.org/0000-0002-7332-6656

Authors' Contribution Statement

Krittebas Paul (corresponding author): Conceptualisation; methodology; collecting and analysing data; developing the first draft, cross-checking for references, final reviewing and re-writing the final draft.

Priyanka Bhattacharjee: Conceptualisation; methodology; literature searching; collecting references, writing the first draft; preliminary reviewing and writing the final draft.

Both the authors read and approved the final manuscript prepared for submission.