

CHALLENGES AND OPPORTUNITIES OF WASTE PICKERS' ENGAGEMENT IN INFORMAL WASTE RECOVERY AND RECYCLING SECTORS IN LAGOS MAINLAND, NIGERIA

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Abstract

This study assessed the challenges and opportunities of waste pickers' engagement in the informal waste and recovery sectors in Lagos mainland. A purposive sampling method was adopted to select 150 waste pickers who volunteered to be respondents for the questionnaire administration. The findings indicated that the challenges of waste pickers in material recovery and reuse were price fluctuations, low self-esteem, harassment and occupational hazards of injuries and ailments. The result also indicate that the opportunities associated with waste picker's engagement in the waste recovery sector are material recovery, reduction in environmental pollution, income generation for the urban poor, reduction in the volume of waste stream as well as cost of waste management. The study also revealed that formalization of informal recycling into a municipal solid waste management sector through cooperative association, legal recognition that protect their human rights and safe working conditions will improve their acceptance by the public and municipalities and also reduce the incidence of poverty, social marginalization, health hazards and their susceptibility to exploitation by middle men. Recommendations made based on the findings are provision of protective equipment to minimize injuries and occupational hazards, promulgation of laws to protect the rights and dignity of waste pickers, provision of accessible and quality health care services, formation of waste pickers cooperative for protection and collective bargaining, integration of informal recycling with the formal waste management sector in order for it to be lucrative and generate more jobs.

Keywords: Challenges, Informal Waste Pickers, Opportunities, Recovery, Recycling

INTRODUCTION

Inadequate municipal solid waste management is one of the factors that contributes to waste accumulation in the low- and middle-income developing countries with global projections of 2.2 billion tons of garbage by 2025 (Hoornweg and Bhada-Tata, 2012). UN-Habitat (2022) reported that over 1 million tons of waste impacts our health and environment including the oceans on a daily basis with global amount of municipal solid waste generation expected to double by 2050.

Estimates have shown that 80–90% of the municipal solid waste generated in Africa is composed of 57% wet biodegradable organic waste, while other waste components include plastic, paper, glass, metal, textiles, construction and demolition waste with

percentages of 13%, 9%, 4%, 4% and 13% respectively. These waste fractions offer opportunities for actors such as waste pickers, itinerant waste buyers and junkshop scrap dealers at the different stages of the recovery and recycling value chain enterprises, and for the creation of sustainable green jobs in the circular economy (Hoornweg and Bhada-Tata, 2012; Van Wyk, 2018; ILO, 2019).

Waste pickers engagement in the informal waste and recovery sectors contributes to sustainable cities by turning waste into economic opportunities, reducing the impacts of pollution on the environment and public health through litter control, decreasing the economic costs of waste management for municipal

budgets, facilitating circular waste management solutions and mitigating greenhouse gas emissions and resource conservation. Currently waste pickers contribute to recovery and recycling of almost 60% of plastic waste worldwide and sometimes provide the only form of municipal solid waste services (UN-Habitat, 2022). It is increasingly recognized that waste picking activities often represent the only means of recycling for municipalities in low and middle-income countries (Ezeah et al., 2013; Sanada, 2011; Gunsilius et al., 2011; Scheinberg et al., 2010; UNEP/UNITAR, 2013).

National Bureau of Statistics (NBS) reported that the economic downturn experienced in Nigeria in 2016 made employment difficult in the formal sector thereby creating opportunities for the informal sector employment with the waste recovery and recycling sectors inclusive accounted for 92.3% employment in Q3 2023 as against the 12.7% number of persons employed in the salaries and wages formal sector during the same period (NBS, 2024).

Despite activities of waste picking generating positive externality to society, waste picker's role in environmental management is not recognized by municipal authorities. They endure and work under hazardous conditions and also survive in a very hostile social and physical environment (Ojeda-Benitez et al., 2002; Gutberlet, 2008). A pointer to these challenges is the perception of the public that people who handle waste are dirty, inferior and poor and constitute social nuisance and are often associated with crime and political collusion (Wilson et al., 2009).

Report from studies in developing countries identified variety of policies that poses some barriers to the integration of informal waste pickers into an inclusive waste management system to include repressive policies that enshrine restrictions, neglect

and hostility towards waste pickers since their activities are considered illegal, unorganized, unregistered, unregulated and in most cases they are not in possession of trading licenses and do not pay taxes, and are not included in the government insurance, social welfare or funding schemes. Another limitation is lack of recognition from municipal authorities pertaining to the economic, social, and environmental benefits of waste picking and recycling (Ezeah, Fazakerley and Roberts, 2013; Medina, 2008., Wilson et al., 2006; Medina, 1997). Municipal authorities in Nigeria have done nothing to encourage and incorporate waste pickers into formal waste management plans. There is a need to document the challenges and opportunities of waste pickers engagement in the informal sector of Nigerian economy so as to suggest appropriate pathways for their integration into the formal waste management service delivery system and this is the gap in knowledge that this study intend to fill.

MATERIALS AND METHODS

Study area

Lagos Mainland as a Local Government Area in Lagos State is situated in central Lagos with its administrative headquarter at Ebute Metta and it is located between latitudes 6°27'40"N and 6°31'40"N and longitudes 3°21'0"E and 3°25'0"E (Figure 1). It is one of the most densely populated areas in Lagos State with a mix landuse pattern of residential, commercial, educational and industrial areas. It also accommodated several tertiary institutions such as the University of Lagos, Yaba College of Technology among others with notable landmarks and tourist attractions such as the National stadium and the Lagos city mall (Lagos State Government Online, 2021).

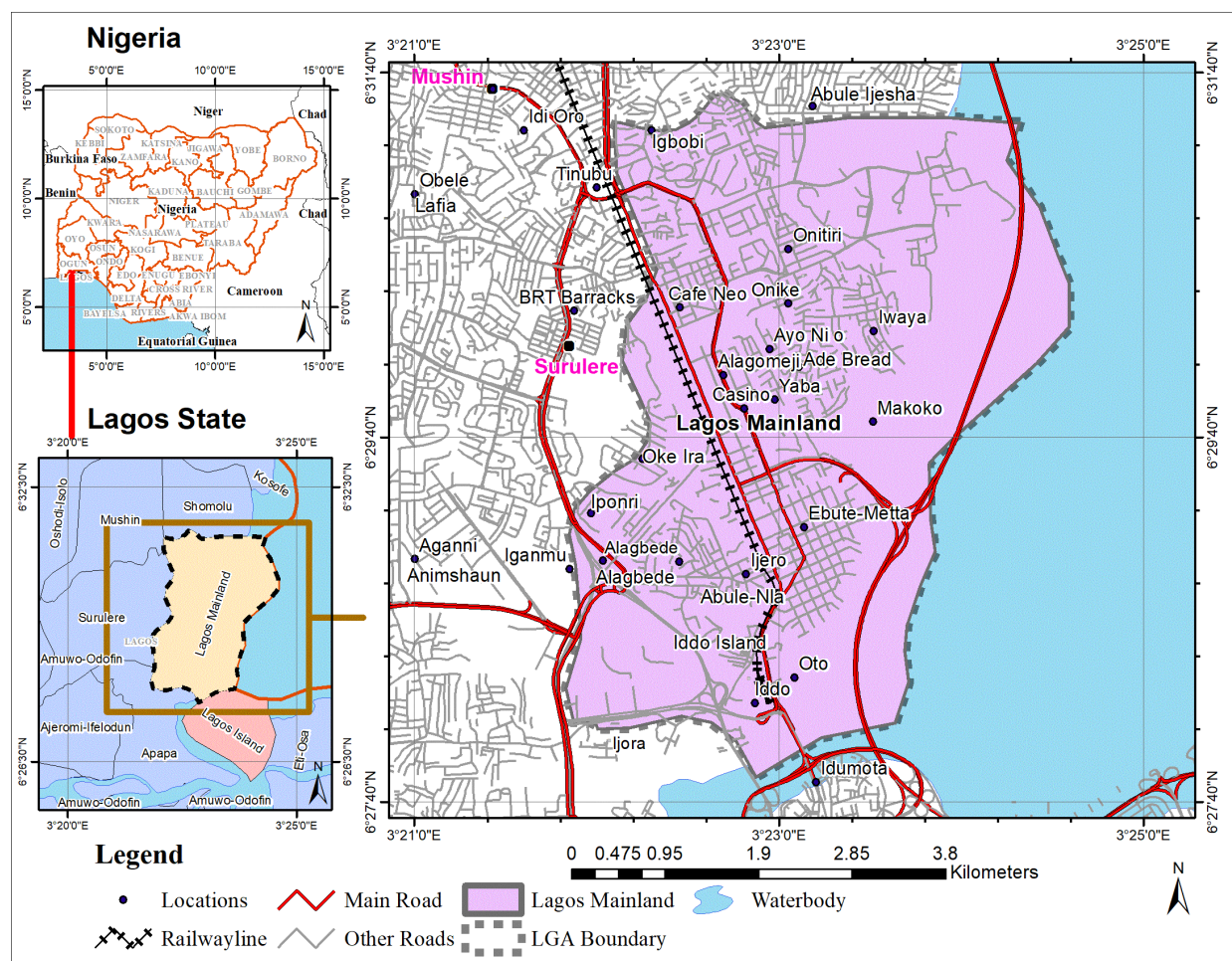


Figure 1 Lagos Mainland
Source: Modified from Administrative Map of Lagos State, 2023

Methods

Waste picking activities is mostly carried out independently and hence lacks a sampling frame and a purposive sampling technique was employed to select 150 waste pickers across the settlements of Ijora, Ebute Meta, Abule Nla, Makoko and Alagomeji who volunteered to be part of the study and the distribution of the copies of questionnaire administered is presented on table 1. The data collected for the study were analyzed using descriptive statistics and the results were summarized in tables.

Table 1: Sample Size Distribution by Location

S/N	Location	Sample Size
1	Ijora	35
2	Ebute Meta	30
3	Abule Nla	30
4	Makoko	30
5	Alagomeji	25
Total		150

Source: Author's Fieldwork, 2023

RESULTS AND DISCUSSION

Demographic Characteristics of Respondents

The demographic characteristics of the sampled waste pickers considered in this study centered on gender, age

and educational attainment and are presented in Table 2.

Table 2: Demographic characteristics

Characteristics		Ijora		Ebute Meta		Abule Nla		Makoko		Alagomeji		Total	
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Gender	Male	33	94.29	25	83.33	27	90.00	28	93.33	25	100.00	138	92.00
	Female	2	5.71	5	16.67	3	10.00	2	6.67	0	0.00	12	8.00
Age	10–20	3	8.57	1	3.33	0	0.00	0	0.00	0	0.00	4	2.67
	21–30	19	54.29	19	63.33	21	70.00	21	70.00	8	32.00	88	58.67
	31–40	13	37.14	10	33.33	9	30.00	9	30.00	17	68.00	58	38.67
Educational Attainment	No Formal Education	29	82.86	24	80.00	21	70.00	25	83.33	20	80.00	119	79.33
	Primary	6	17.14	6	20.00	9	30.00	5	16.67	5	20.00	31	20.67

Source: Author's Fieldwork, 2023

The study revealed that 92.00% and 8.00% of the respondents were male and female respectively. This study confirmed the findings of Nzeadibe and Iwuoha (2008); Muoghalu and Okoye (2010); Schenck and Blaauw (2011); Afon (2012) and Ogwueleka and Naveen (2021) who reported that waste picking activities is male dominated.

The study also revealed that 2.67% of the respondents were averagely 10-20 years old and 58.67% were between 21-30 years old while 31-40 years age bracket accounted for 38.67%. The studies of Ogwueleka and Naveen (2021) and Abu and Michael (2018) also confirmed that majority of scavengers were between 21 and 40 years old.

The study revealed that respondents with primary certificates are 20.67% while majority of the waste pickers had no formal education with a statistic of 79.33%. The high level of illiterate waste pickers further confirmed that educational qualification is not an entry requirement. The studies of Abu and Michael (2018); Scheinberg et al., (2004); Masocha (2006); Mareello and Helwege (2013); Samson (2010) and

Schenck and Blaauw (2011) reported that informal sector does not require any kind of formal education and waste pickers are known to have low literacy levels.

Structure of informal waste recycling activities in Lagos Mainland

The Structure of informal waste recycling activities of the respondents in the study area is presented in table 3. The study revealed that the waste pickers interviewed in Lagos Mainland have been in waste recycling business between 1 and 15 years. A related study by Ogwueleka and Naveen (2021) and Nzeadibe and Iwuoha (2008) reported that the job experience of the waste pickers varies and that some of the waste pickers worked for periods between 1-16 years. The study also revealed that interviewed waste pickers recovered recyclable materials by segregation from mixed waste either from residential litter bins, public collection /skip containers, street/road side dump, and also designated or illegal dump sites with percentages of 6.00%, 9.33%, 74.00% and 12.67% respectively.

Table 3: Structure of informal waste recycling activities

Characteristics	Subcategory	Ijora		Ebute Meta		Abule Ija		Makoko		Alagomeji		Total	
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Experience on the Job	1–11 months	2	5.71	0	0.00	0	0.00	0	0.00	2	0.00	2	1.33
	1–5 years	5	14.29	9	30.00	7	23.33	3	10.00	2	8.00	26	17.33
	6–10 years	18	51.43	15	50.00	16	53.33	14	46.67	17	68.00	80	53.33
	11–15 years	10	28.57	6	20.00	7	23.33	13	43.33	6	24.00	42	28.00
Method of Collection	Residential litter	2	5.71	2	6.67	2	6.67	3	10.00	0	0.00	9	6.00
	Bin	1	2.86	4	13.33	2	6.67	3	10.00	1	4.00	11	9.33
	Public collection/Skip	30	85.71	20	66.67	22	73.33	20	66.67	19	76.00	111	74.00
	Street/Roadside Dump	2	5.71	4	13.33	4	13.33	4	13.33	5	20.00	19	12.67
Mode of Collection	As Family Members	3	8.57	1	3.33	0	0.00	0	0.00	0	0.00	4	2.67
	Individually	27	77.14	27	90.00	23	76.67	22	88.00	26	84.00	126	84.00
	Group of Waste Pickers	5	14.29	2	6.67	7	23.33	3	12.00	3	12.00	20	13.33
	Plastic/PET Bottles	8	22.86	6	20.00	10	33.33	7	23.33	4	16.00	35	23.33
Reuse/Recyclables Collected	Rubber	2	5.71	3	10.00	2	6.67	1	4.00	1	4.00	11	7.33
	Paper	22	62.86	13	53.33	14	46.67	17	68.00	17	68.00	84	56.00
	Metal Scrap (Alum. /Steel)	3	8.57	5	16.67	5	13.33	3	12.00	3	12.00	20	13.33
	Glass/Bottles	0	0.00	9	30.00	5	16.67	2	8.00	2	8.00	18	12.00
Working Days per Week	3–4 days	3	11.43	7	23.33	4	13.33	6	24.00	6	24.00	26	17.33
	5–6 days	5	57.14	18	60.00	16	53.33	12	48.00	12	48.00	84	56.00
	All days	6	31.43	5	16.67	10	33.33	7	28.00	7	28.00	38	25.33
Working Hours per Day	6–9 hours	8	11.43	3	10.00	1	3.33	0	0.00	1	4.00	9	6.00
	10–13 hours	2	57.14	5	16.67	8	26.67	11	44.00	11	44.00	43	28.67
	14 hours	3	31.43	20	66.67	20	66.67	14	56.00	14	56.00	84	56.00
Quantity Collected per Day	5–8 kg	2	5.71	1	3.33	0	0.00	0	0.00	6	0.00	9	6.00
	9–12 kg	3	8.57	8	26.67	6	20.00	11	44.00	11	44.00	43	28.67
	13–16 kg	27	77.14	20	66.67	24	80.00	14	56.00	14	56.00	84	56.00
	>16 kg	5	14.29	1	3.33	0	0.00	0	0.00	2	0.00	14	9.33

Source: Author's Fieldwork, 2023

Abu and Michael (2018); Nzeadibe and Ajaero, (2010); Nzeadibe and Iwuoha (2008) and Medina (2000) reported in their studies that waste pickers

engaged in waste scavenging activities recovered recyclable waste materials from the streets, dump sites, waste bins and containers and also directly from

households that engaged their services in the collection and disposal of waste and refuse at a cost. The result presented in table 2 revealed that informal recycling activities and recyclable waste collection by waste pickers is organized at the level of family members, individuals and group of waste pickers and these modes recorded 2.67%, 84.00% and 13.33%. This study confirmed the conclusion of Van Horen (2004) and Abu and Michael (2018) who reported that the structure of waste picking is organized under family, individual and group waste scavenging.

The study revealed the preference for recyclable materials in the order of scrap metal 56.00%, plastics 23.33%, glass/bottle 13.33% and the least is paper at a rate of 7.33%. Imam et al (2008); Ogwueleka and Naveen (2021) and Nzeadibe and Iwuoha (2008) categorized the recyclable materials recovered for reuse and recycling by waste pickers into metal, glass/bottles, tyre, paper, old cement bags and sacks, aluminium, tins and cans, plastics and nylon, construction and demolition waste, electronic waste, clothes/discarded shoes and ornaments.

The study also revealed that on the average those that work for 3-4 days in a week is 16.67%, 5-6 days in a

week is 61.33% and 7 days of the week is 22.00% while working hours daily begins from 6.00am to late as 8.00 pm or when the visibility is poor or the picker is fatigue. Averagely the working hours is represented by 6-9 hours at 18.67%, 10-13 hours at 56.00% and 14 hours at 25.33%. The studies of Awopetu et al (2014) and Ogwueleka and Naveen (2021) also affirmed that scavengers on the average work between 10-12 hours per day.

The study revealed that on the average the quantity of recyclable collected per day ranges from 5-8 kg, 9-12 kg, 13-16 kg and above 16kg with percentage recovery represented by 6.00%, 28.67%, 56.00% and 9.33% respectively. Ogwueleka and Naveen (2021) asserted that the quantity of recyclable collected per day by scavengers varies and this depends on factors such proximity to the landfill, location of the material, age and sex of the picker, material type, collection systems and methods and geographical conditions.

Impact of waste picking on the income level of its participants

The impact of waste picking on income level of informal waste recycling activities of the respondents in the study area is presented in table 4.

Table 4: Waste picking impact on income level of recyclers

Characteristics	Subcategory	Ijora Freq (%)	Ebute Meta Freq (%)	Abule Nla Freq (%)	Makoko Freq (%)	Alagomeji Freq (%)	Total Freq (%)
Motivation of Waste Recycling	Economic reasons	35 (100.00)	30 (100.00)	30 (100.00)	30 (100.00)	25 (100.00)	150 (100.00)
	Plastics (₦250)	8 (22.86)	6 (20.00)	10 (33.33)	7 (23.33)	4 (16.00)	35 (23.33)
	Paper (₦200)	2 (5.71)	3 (10.00)	2 (6.67)	3 (10.00)	1 (4.00)	11 (7.33)
	Metal scraps (₦300)	22 (62.86)	16 (53.33)	14 (46.67)	15 (50.00)	17 (68.00)	84 (56.00)
	Glass/bottle (₦200)	3 (8.57)	5 (16.67)	4 (13.33)	5 (16.67)	3 (12.00)	20 (13.33)
Average Monthly Income	> ₦30,000	35 (100.00)	30 (100.00)	30 (100.00)	30 (100.00)	25 (100.00)	150 (100.00)

Source: Author's Fieldwork, 2023

The study revealed that the primary motivation for becoming an informal waste picker is to generate income as 100.00% of the waste pickers that served as respondents reported that they were in the business of waste picking solely for employment and other economic reasons. Scheinberg et al., (2004),

Hartmann (2018), Asibor and Edjere (2017) and Harfadli, Ramadan, Rachman and Matsumoto (2024) stated that waste picking is seen as a source of livelihood and it provides income to the operators which they utilize in taking care of the need of their families. Medina (2010) stated that there is a

correlation between the survivalist nature of street picking and poverty and as long as there is poverty, there will always be street garbage pickers.

The study revealed that recycled plastics is obtained at ₦250.00 per kg, paper is sold at ₦200.00 per kg while scrap metal and glass/bottle is sold at ₦300.00 and ₦200.00 respectively per kg. 56.00% of the waste pickers interviewed indicated that they prefer scavenging for scrap metal because the pay is higher, 23.33% of the waste pickers prefer plastics and 13.33% go for glass/bottles while 7.33% prefer to recycle papers. Ogwueleka and Naveen (2021) and Medina (2000) affirmed that most waste pickers were interested in waste of high earning.

The study revealed that the average monthly income of each participant was estimated by multiplying the total kilogram of waste on a daily basis by the unit price per kilogram to arrive at the monthly per capita income using a base of 24 working days in a month.

The monthly income per head of a plastic recycler ranges from ₦48,000.00- ₦96,000.00 while that of a paper recycler ranges from ₦38,000.00- ₦76,800.00, the income of a scrap metal waste picker ranges from ₦57,600.00- ₦115,200.00 while that of a glass/ bottle recycler range from ₦38, 000.00-₦76,800.00. In comparison with the ₦30,000.00 national minimum wage of year 2019 for federal work per month, the monthly income of waste pickers in Lagos mainland is above the minimum wage and they are satisfied with the reward from waste picking. Nzeadibe and Iwuoha (2008), Abu and Michael (2018) and Scheinberg et al. (2010) reported in their studies that waste pickers earn above the national minimum wage.

Impact of waste scavenging and recycling activities on the environment

The impact of waste picking and waste recycling activities on the environment is presented in table 5.

Table 5: Benefit of waste picking and recycling activities on the environment

Characteristics	Subcategory	Ijora Freq (%)	Ebute Meta Freq (%)	Abule Nla Freq (%)	Makoko Freq (%)	Alagomeji Freq (%)	Total Freq (%)
Benefit of Waste Picking and Recycling	Reduces environmental pollution	20 (57.14)	16 (53.33)	17 (56.67)	19 (63.33)	14 (56.00)	86 (57.33)
	Reduces waste accumulation	5 (14.29)	6 (20.00)	3 (10.00)	5 (16.67)	4 (16.00)	23 (15.33)
	Aids material recovery of recyclables	10 (28.57)	8 (26.67)	10 (33.33)	6 (20.00)	7 (28.00)	41 (27.33)

Source: Author's Fieldwork, 2023

The study revealed that waste pickers recognized that their activities have some benefits in the form of reducing environmental pollution at 57.33%, reduction of the accumulation rate of waste thereby extending the lifespan of dumpsites at 15.33% and also aid material recovery of recyclables thereby contributing to reduction of cost of raw material usage and conservation of natural resources at 27.33%. The findings of this study are consistent with the reports of Bui et al., 2022; Budihardjo,

Ardiansyah and Ramadan, 2022; Godfrey, 2021; Ailyn et al., 2018; Aparcana, 2017 and Wilson et al., 2012.

Associated hazards and health risk of waste scavenging activities

The hazards and health risk experienced by waste pickers during scavenging activities in the study area is presented in table 6.

Table 6: Hazards /health risk experienced during waste picking

Characteristics	Subcategory	Ijora Freq (%)	Ebute Meta Freq (%)	Abule Nla Freq (%)	Makoko Freq (%)	Alagomeji Freq (%)	Total Freq (%)
Kinds of Injuries Experienced	Bottle cut	13 (37.14)	14 (46.67)	14 (46.67)	13 (43.33)	13 (52.00)	67 (44.67)
	Nail/pin piercing	12 (34.29)	12 (40.00)	8 (26.67)	9 (30.00)	7 (28.00)	48 (32.00)
	Used syringes/needle	4 (11.43)	2 (6.67)	4 (13.33)	5 (16.67)	2 (8.00)	17 (11.33)
	None of the above	6 (17.14)	2 (6.67)	4 (13.33)	3 (10.00)	3 (12.00)	18 (12.00)
Kinds of Ailments Experienced	Respiratory problem	6 (17.14)	5 (16.67)	2 (6.67)	3 (10.00)	3 (12.00)	19 (12.67)
	Body rash/body pains	20 (57.14)	11 (36.67)	19 (63.33)	15 (50.00)	12 (48.00)	77 (51.33)
	Eye problem	2 (5.71)	4 (13.33)	2 (6.67)	3 (10.00)	1 (4.00)	12 (8.00)
	Cholera/Diarrhea/Dysentery	4 (11.43)	8 (26.67)	4 (13.33)	7 (23.33)	5 (20.00)	28 (18.67)
Solutions to Health Risk	None of the above	3 (8.57)	2 (6.67)	3 (10.00)	2 (6.67)	4 (16.00)	14 (9.33)
	Provision of PPE	16 (45.71)	14 (46.67)	13 (43.33)	14 (46.67)	14 (56.00)	71 (47.33)
	Access to qualitative health services	8 (22.86)	10 (33.33)	11 (36.67)	8 (26.67)	5 (20.00)	42 (28.00)
	Basic sanitation/hygiene practices	11 (31.43)	6 (20.00)	6 (20.00)	8 (26.67)	6 (24.00)	37 (24.67)

Source: Author's Fieldwork, 2023

The study revealed that majority of the waste pickers had reported cases of injuries such as bottle cuts, nail/pin piercing and injuries from used syringes/needle. In addition to the injuries sustained in their line of duties, the interviewed waste pickers had also suffered from ailments such respiratory problem, body rash/ body pains, eye problem as well as incidence of cholera/diarrhea/dysentery. Respiratory problems of coughing and shortness of breath as well as eye irritation was attributed to exposure to fumes and smoke from waste incineration. The body pain experienced was attributed a range of reasons such as working for long hours, trekking long distances, bending for long periods in search of waste recyclables. Those with body rash was attributed to the dirty clothes and the working environment and probably not taken their bath regularly and thoroughly. The incidences of cholera/diarrhea/dysentery were attributed to unsafe handling of food and drinking water and direct

contact with waste and other disease vectors as well as the poor practice of sanitation and hygiene. Findings from other studies acknowledged that the task of waste picking is demanding and exposes workers to dangers like infections, sharp items, toxic chemicals while the profession's most cited health issues include epidermal, communicable, musculoskeletal, and respiratory diseases (Marello and Helwege, 2014; Zolnikov et al., 2021; Mlotshwa et al., 2022; Jerie, 2016; Black et al., 2019; Uddin and Gutberlet, 2018; Oguntoyinbo, 2012).

Challenges faced by waste scavenging operators

The challenges faced by the scavengers are presented in table 7. The study revealed that the challenges of the waste pickers ranged from price fluctuations, low self-esteem and harassment from people with an overall response rate of 18.67%, 34.00% and 47.33% respectively.

Table 7: Challenges of waste picking operation

Challenges	Ijora Freq (%)	Ebute Meta Freq (%)	Abule Nla Freq (%)	Makoko Freq (%)	Alagomeji Freq (%)	Total Freq (%)
Price Fluctuations	5 (14.29)	5 (16.67)	7 (23.33)	6 (20.00)	5 (20.00)	28 (18.67)
Low Self-Esteem	12 (34.29)	10 (33.33)	13 (43.33)	8 (26.67)	8 (32.00)	51 (34.00)
Harassment	18 (51.43)	15 (50.00)	10 (33.33)	16 (53.33)	12 (48.00)	71 (47.33)

Source: Author's Fieldwork, 2023

Waste pickers are faced with price fluctuation as result of the monopolistic markets in which junkshop scrap dealers and middlemen operate and are often exploited by paying them low and variable prices while they in turn generate high profits from selling these materials to industries (Medina, 2000). The low self-esteem of the waste pickers resulted from lack of social acceptance of their role as environmental agents and often endures stigmatization, humiliation, harassment and exclusion. Municipal authorities and households consider informal waste picking activities as an embarrassment, a social problem, a lower income occupation, and a public nuisance that should be prohibited. This perception is responsible for the discriminatory behaviour by some officials and individuals who arrest, harass and seize their collection carts, accusing them of theft and posing property security hazards while using their services (Zolnikov et al., 2021; Oteng-Ababio, 2012; Simatele and Etambakonga, 2015; Wilson, Velis and Cheeseman, 2006; Nzeadibe and Iwuoha, 2008; Gunsilius, 2010; Dandapani, 2017).

Formalization of waste picker's role

Steps to formalization and improvement of informal recycling sector are presented in table 8. The study revealed that the formalization of waste picking so as to improve informal recycling sector include formation of cooperative association, integration into formal waste management sector, promulgation of laws protecting their human rights and provision of working equipment. Wilson, Velis and Cheeseman (2006) stated that waste picker organizations are positioned to help members address some of the financial and health burdens faced by enabling informal workers to extract higher value from collected waste and by providing education and training on minimizing health risks. In addition, organization of waste pickers have important effects on increasing members' income and it also create a space for empowerment and collective consciousness and allow members to achieve greater bargaining and negotiation powers, thereby improving their ability to negotiate with local and national authorities for better working conditions, recognition of their environmental and economic contributions, integration within municipal waste management systems, and increased institutional support (Medina, 2000 and Gutberlet, 2008).

Table 8: Formalization of waste pickers' role

Suggestions	Ijora Freq (%)	Ebute Meta Freq (%)	Abule Nla Freq (%)	Makoko Freq (%)	Alagomeji Freq (%)	Total Freq (%)
Formation of Cooperative Associations	16 (45.71)	20 (66.67)	19 (63.33)	20 (66.67)	10 (40.00)	85 (56.67)
Integration into Formal Sector	6 (17.14)	5 (16.67)	5 (16.67)	4 (13.33)	5 (20.00)	25 (16.67)
Promulgation of Laws Protecting Human Rights	7 (20.00)	2 (6.67)	4 (13.33)	4 (13.33)	7 (28.00)	24 (16.00)
Provision of Working Equipment	6 (17.14)	3 (10.00)	2 (6.67)	2 (6.67)	3 (12.00)	16 (10.67)

Source: Author's Fieldwork, 2023

Ghosolfi et al. (2016) reported that the involvement waste pickers in organizations, cooperatives, or micro-small enterprises is necessary for social inclusion and formalization of their role in waste management Cooperative provide opportunities to pool resources to buy or rent cleaning and storage facilities, enabling bulk sales with possibility for larger incomes and a stronger negotiating position

and could also give them access to several insurance options and government-sponsored protection (Fei et al., 2016 and Ikhlayel, 2017). Morais et al, (2022) stated that the advantages of formalization of waste pickers include lowering poverty, preventing child labor, addressing gender disparity, and increasing the respect for waste pickers with additional benefits of obtaining material resources, economies of scale, and

political rights that they would never be able to gain on their own.

CONCLUSION AND RECOMMENDATIONS

This study underscores the contributions of informal sector waste pickers to solid waste management in urban municipalities. The frequently cited benefits of waste pickers' engagement in informal waste recovery and recycling sector include conservation of natural resources, reduction of air, water and land pollution, reduction in the cost of waste management, longevity of dumps and landfill disposal sites, poverty reduction and livelihood support for the urban poor. The advantage of waste pickers' activities goes beyond simply protecting our health and environment but also generating positive externalities to the nation's economy. Despite their positive contribution to environment management, they face a lot of challenges of social injustice, inequality, exclusion, harassment and stigmatization among others. Recommendations made based on the findings include:

- i. Provision of personal protective equipments so as to minimize the rate of injuries and occupational hazards
- ii. Promulgation of laws that would protect the human rights and dignity of waste pickers.
- iii. Provision and accessibility to quality health care facilities.
- iv. Organizing waste pickers into cooperative association is imperative for protection and collective bargaining.
- v. Training and capacity building is advocated for waste pickers so as to broaden their knowledge and skills in order to equip them to fare better in formal work place environment.
- vi. Restructuring and integration of informal recycling with the formal waste management sector in order for it to be lucrative to generate more jobs.

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