LASU Journal of Health Sciences
www.lasucom.edu.ng; e-mail: lasu.jhs@lasucom.edu.ng
Volume 3 Issue 1(2020), pages 37 - 43

Waste Picking: Socio-Economic Implications and Safety Practices at an Urban Dumpsite in Nigeria

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ABSTRACT

Background: The aim of the study was to determine the socio-economic implications and safety practices among waste pickers at Olusosun dumpsite, Lagos, Nigeria.
Methods: A cross sectional design using a total population of two hundred and Seventy waste pickers at Olusosun dumpsite was carried out. Data was collected using an interviewer administered questionnaire and participant observation. Data was analysed using SPSS version 22.
Results: Majority (88.1%) of the respondents was male, 11.5% of the respondents were below 20 years, and 49.6% had at least a secondary education. About 84% claimed the job paid off than other jobs and 84.4% of respondents earned minimum of N5, 000 per week. Twenty one percent owned houses and 95.5% were not willing to leave waste picking for another job. All respondents were aware of hazards associated with waste picking at dumpsites, 78.9% used some form of PPE of which 43.7% used PPE every time at work.
Conclusion: There are economic opportunities in recovery of items from wastes at dumpsite and waste pickers were not adequately protected from hazards of the job. It is recommended that sorting of wastes at points of generation be encouraged and use of PPEs by waste pickers be enforced.

Keywords: Socioeconomic, safety practices, waste pickers, Nigeria

INTRODUCTION

Cities and urban areas generate large volume of solid wastes due to their rapid growth and population [1]. On a daily basis, the large volume of wastes generated coupled with the inability of government agencies and individuals to sustainably manage the waste have led to reating room for the activities of waste pickers.

A waste picker is a person who salvages reusable or recyclable materials to sell or for personal consumption [2]. Waste Pickers include people working on dumps, persons picking garbage on the streets, to informal private collectors of recyclables who sell to middlemen or businesses or transform waste into new products[3].

Lagos as a mega city also faces the challenge of solid waste management as about 14 metric tonnes of waste is generated daily [4]. The wastes generated from households, markets, recreational and industries are bagged in waste bags from source of generation without any form of sorting or separation (except in a few areas of the State where bins are labelled by items and stationed at designated places). The presence of recyclables and reusable materials in the waste creates opportunity for waste pickers in the waste management chain. Currently, wastes generated in homes, places of work and industries in Lagos state are evacuated and transported to the dumpsites by Private Sector Participants (PSP) and Lagos State Waste Management Agency (LAWMA).

Waste picking has been reported to provide income for over 15 million people worldwide[5]. A previous research in Lagos [6] reported that companies are buying some of the products scavenged from dump sites from waste traders. While waste pickers carry out their activities, they have been reported to be exposed to skin and blood infections resulting from direct contact with waste, injuries and infection of wounds, respiratory infections from exposure to infected dust (especially during landfill operations), diseases that result from bites of animals feeding on waste and intestinal infections transmitted by flies feeding on the waste. Other hazards include poisoning and chemical burns resulting from contact with hazardous chemical waste mixed with general waste, burns and other injuries resulting from methane gas explosion at landfill sites [7]. This study was carried out to determine the socio-economic implications and safety practices among waste pickers at Olusosun dump site, Lagos state of

Nigeria.

MATERIALS AND METHODS

The study was carried out in Lagos State which is regarded as the economic nerve centre of Nigeria. Lagos is urban in nature with a population of 12.55 million people [8], several markets, entertainment/ recreational centres, fast foods/restaurants, schools, industries, seaport and airports, hence regarded as the 8th fastest growing city in Africa [9]. Olusosun dumpsite where the study was carried out is located in Ojota area of Lagos and is the largest dumpsite in Lagos (42.7 hectares is size). The dumpsite serves as a sanitary landfill site and has been in existence since 1992. It receives approximately 40% of the total waste deposit in Lagos[4].

A descriptive cross sectional study was carried out among waste pickers at Olusosun dumpsite. The minimum sample size for the study was determined using Fisher's formula for sample size estimation for descriptive studies and a finite population correction[10] was made due to the small population of the waste picker population. The statistical assumptions were a type 1 error rate of 5%, 50% use of PPE by waste pickers. The calculated minimum sample size was 234 and the total population of waste pickers present were was recruited into the study. The inclusion criterion was individuals registered by the existing association at the dumpsite while the study excluded individuals that were not willing to participate in the study. A total population of 270 waste pickers was used for the study.

Data was collected using a structured questionnaire and participant observation. The questionnaire was interviewer-administered; by four research assistants and two interpreters and was pretested at another dumpsite (Solus dumpsite at Igando, Lagos). Informed consent was sought from the participants which was validated by a thumb print of participants. Questionnaire collected information on: sociodemographic characteristics, socioeconomic variables and safety practices of respondents. Participant observation was used to collect data on use of personal protective equipment (PPE) and the types used by study participants. Observations made for each study participant were noted on the questionnaire of each participant for ease of analysis. Data derived from the questionnaire were analyzed using Statistical Package for Social Sciences (SPSS) version 20 (IBM Corp. Released 2011. IBM SPSS Statistics for Windows, version 20.0. Amonk, NY: IBM Corp). Frequency tables and percentages were utilized for presentation of data, Chi-square was used to compare between two variables while level of significance was set at $p< 0.05$.

Permission was obtained from LAWMA and executives officers of the waste pickers association and all study participants gave their informed consent for inclusion in the study.

RESULT

Majority (88.1%) of respondents were male and were between the age group 31-50years with 7.4% representing non-Nigerians; more than two-thirds (80.4%) of the respondents had dependent relatives (Table 1).

Eighty nine percent of respondents had spent at least one year on the job and 73% worked a minimum of 4 days per week with majority (60%) working for 5-8hours per day. Majority of the respondents (52.6%) expended a minimum of N3000 to work every week and 21.1% owned houses and 68.1% worked solely as waste pickers (Table 2).

About eighty percent of the respondents were paid daily and 84.4% of them made more than N5000 per week from the job (Table 3). Majority (90.7%) of the respondents had expressed satisfaction with the job; with 95.5% unwilling to leave the job for other jobs, 3.0% was willing to leave the job, while 1.5% was not sure of their willingness to leave the job.

All the respondents were aware that hazards were associated with waste-picking and majority (70%) got their information from friends & LAWMA trainings while 50% got aware from injuries and other past experiences. Seventy nine percent of the study participants used a form of PPE and protective boots were worn by all the study participants that used PPE (Table 4). Majority (80%) of the respondents took a bath after work and almost half (49.6%) indicated hey had a medical check-up only when provided free.

There was a statistically significant association between use of PPE and number of years spent on the job ($p<0.05$) but there was no statistically significant association between level of education and use of PPE ($p>0.05$) (Table 5).

Table 1: Socio Demographic Characteristic of Respondents

Characteristics	Frequency (N=270)	Percent (%)
Gender		
Male	238	88.1
Female	32	11.9
Age		
< 20	31	11.5
21-30	66	24.4
31-40	78	28.9
41-50	73	27.0
> 50	22	8.1
Education		
No Formal Education	61	22.6
Primary	75	27.8
Secondary	100	37.0
Higher Level	34	12.6
Marital Status		
Married	148	54.8
Single	76	28.1
Divorced	39	14.4
Widow	7	2.6
Number of Children		
None	65	24.1
1-2	117	43.3
3-4	69	25.6
> 4	19	7.0
Dependent Relatives		
None	53	19.6
1-2	63	23.3
3-4	67	24.8
> 4	87	32.2
Ethnicity		
Non Nigerian	20	7.4
Igbo	37	13.7
Yoruba	57	21.1
Hausa	156	57.8

Table 2: Socio Economic characteristics of respondents

Variable	Frequency N=270	Percent (%)
Reason for taking up wastepicking as a job		
Not qualified for available jobs	166	61.5
Could not find a job	197	73.0
It pays more than other jobs	229	84.8
Number of years spent on the job		
< 1 year	29	10.7
1 - 5 years	66	24.4
6 - 10 years	126	46.7
> 10 years	49	18.2
No of working days per week		
1-3 days	73	27.0
4-6 days	96	35.6
7days	101	37.4
Daily working hours		
1-4 hours	58	21.5
5-8 hours	162	60
>8 hours	50	18.5
Means of coming to work		
Public bus	140	48.2
My car	57	21.3
Walk	57	21.1
My motor cycle	26	9.6
Weekly cost of transport (n=213)		
<N3,000	101	47.4
N3,000-N5,000	85	39.9
>5,000	27	12.7
Residential Status		
Manage with a friend	18	6.7
Sleep in any safe place	24	8.9
Own a house	57	21.1
Sleep at dumpsite	63	23.3
Rent a place	108	40.0
Combining waste picking with other jobs.		
Yes	86	31.9
No	184	68.1

Table 3: 3Motivation for Waste picking

Variable	Frequency (N=270)	Percent (%)
***Use for the picked items**		
Sell to companies	182	67.4
Sell to individuals / middle men	193	71.5
Personal use	270	100.0
***Type of Waste being picked**		
PET bottles	18	6.7
Paper	23	8.5
Cans	25	9.3
Metal	34	12.6
All (PET, Paper, can, Metals)	170	63.0
Other Valuables	270	100
Mode of payment for picked items		
Daily	218	80.7
Weekly	38	14.1
Monthly	14	5.2
Weekly Income of respondents		
<N5,000	42	15.6
>N5,000-N10,000	81	30.0
>N10,000-N15,000	74	27.4
>N15,000 - N20,000	51	18.9
>N20,000- N25,000	15	5.6
>N25,3000	7	2.6

*Multiple responses

Table 4: Safety practices among waste pickers

Variable	Frequency	Percentage
***Use of PPE (n=270)**		
Yes	21	378.9
No	57	21.1
***Type of PPE (n=213)**		
Boots	213	100.0
Hand Gloves	15	259.8
Face mask	71	27.8
Overall	71	27.8
Helmet	22	8.5
Frequency of Use of PPE(n=270)		
Every time at work	118	43.7
When I feel like	65	24.1
When forced to do so	51	18.9
When facility manager is around	36	13.3
Medical check-up (N=270)		
Medical check-up (self-initiated)	126	46.7
When provided free	134	49.6
none	10	3.7
Taking bath after work		
Yes	216	80.0
No	54	20.0

*Participant observation

Table 5: Association between Use of PPE, Number of years on the job and Education

Variable	Use of PPE				
	Yes	No	X^2	df	p
Number of years on Job					
< 1year	19 (65.5)	10 (34.5)	8.988	3	0.029
1-5 years	47 (71.2)	19 (28.8)			
6-10 years	108 (85.7)	18 (14.3)			
>10 years	39 (79.6)	10 (20.4)			
Formal Education					
Primary	52 (69.3)	23 (30.7)	7.777	3	0.051
Secondary	82 (82.0)	18 (18.0)			
Higher Education	31 (91.2)	3 (8.8)			
None	48 (78.7)	13 (21.3)			

DISCUSSION

More than half of study participants (64.9%) had worked as a waste-picker for more than five years which was comparable to a recent study in Latin America [11]. Some of the reasons for such stay at the job in this study could be deduced from the reasons they took up waste picking jobs; which varied from not being qualified for available jobs, inability to find jobs and also that the job gave more economic returns than other jobs. A review[12] reports that employment is greater in the informal sector as it may require less skill, structure and organization as seen in this study. The educational level of the respondents may also be a contributory factor to being on the job for long; as 87.4% did not have beyond a secondary level. A study in Palestine [13] reports a slightly higher proportion (96.1%) of waste pickers not having beyond secondary level education. The high level (29.5%) of unemployment in Nigeria [14] corroborates the reasons given by the respondents.

Majority of the respondents (84%) earned at least N5,000 per week which was equivalent of N20,000 per month and was higher than the stipulated minimum wage of N18,000 at the time of the study. This present study is at variance with earlier an finding at the same dumpsite which reported a daily income of N480 per day (maximum income of N3360 per week) [6] but was similar to finding in Jakarta [13] that reported earnings from waste picking was equivalent to minimum wage. This is not surprising as earlier study in Lagos was at least four years apart from the present study and the 'trade' is evolving and has been mastered over time considering the economic gains. A finding that was surprising was that 21.3% of the respondents owned personal vehicles and another 21.1% owned personal houses. The study did not probe the quality or description of these possessions but it corroborates the economic gains in the job. The economic gains of this job from the finding in this study, ranged from use of picked item for self, to selling to companies and other middlemen. Majority (68.1%) indicated they did not combine waste picking with other jobs which was in keeping with findings in Latin America [11] and may also suggest some satisfaction with the job; as 95.5% of the respondents had indicated unwillingness to leave the job for another job. Waste pickers sleeping at the dumpsite as found in this study among 23.3% of

respondents is worrisome as it poses a threat to these individuals as they are exposed to various biological hazards such as snake bites, contact with pathogenic organisms and gas emissions from the dumpsite. Similar finding was earlier reported in Lagos [15] and South Africa [16]; however, a study in Jordan [17] reported no one sleeping at dumpsite.

The waste pickers in this study picked all kinds of items (paper, cans, metals and other valuables) from the dumpsite similar to previous studies [18-20]. This provides further evidence that wastes were not sorted from sources in Lagos and other major cities of Nigeria [18], a similar feature of other developing countries [19, 20]. This may further make the re-cycling process more laborious as evidenced by the items they picked from the dumpsite (Table 3) which would have been made easier when sorted. Unsorted wastes also make the wastes more hazardous as they could contain sharp materials, toxic chemicals and faecal matter. The waste picking trade provided raw materials to other industries as reported by respondents in this study who sold to companies and some other middle men (who are as well likely to sell to industries); this was also earlier suggested by another Nigerian researcher [18]. Majority of the respondents (68.1%) indicated they did not combine waste picking with other jobs which was in keeping with findings in Latin America [11] and suggestive of some level of satisfaction as 90.7% of study participants had expressed in this study. However, report in Egypt study [21] is contrary to this finding; majority of respondents (81%) had combined waste collection and sweeping with other jobs. This can be due to the contract nature of the job by majority of the study participants in Egypt. In South Africa [19], the finding on job satisfaction (60%) was similar to this present study.

All the respondents were aware that hazards were associated with waste-picking and majority (70%) got their information from friends & LAWMA trainings while 50% got aware from injuries and other past experiences. Seventy nine percent of the study participants used a form of PPE and protective boots were worn by all the study participants that used PPE (Table 4).

All the respondents in this study were aware of hazards associated with waste picking though majority (70%) reported training by LAWMA and friends as their source. Some other study in Gaza[22], had reported 99.7% of respondents had no form of training. The training LAWMA had for waste pickers at dumpsite is commendable considering that this group of individuals are in the informal sector and not employed by LAWMA. Majority (78.9%) of the waste pickers in this study used a form of PPE as observed during the study but a study in Egypt [21] and South Africa [16] reported contrary findings that waste collectors did not use any form of PPE. In Gaza [22], findings revealed study participants sharing PPEs. Despite the finding that 78.9% of respondents in this present study were observed using a form of PPE, they had reported they did not use the PPEs every time at work which was consistent with the study in Gaza [22]. The safety boot was a PPE that was worn by all (100%) study participants that used any form of PPE. All listed PPE in the study was provided for by each individual; this was contrary to findings in an earlier study in India [23] that showed that the protective clothing and gloves were provided for the waste pickers. The reality of what obtains in the present day India may not be ascertained due to the span of time in between when the two studies were conducted and more recent studies validating this finding were not found. The International Labour organization (ILO) however recommends the use of gloves, safety boots and tools for sorting as a masure to improve safety among waste pickers [24].

The practice of medical check-up was not a common practice among these waste pickers (especially when it was self-initiated- 46.7%) though the extent or frequency of check-up, where or how they accessed health care was not explored by this study. This finding is higher when compared to the finding in Egypt [21] where none of the participants had reported having a medical check-up. This may not be surprising as this is an informal sector and practice of medical check-ups is only organized in the formal sector where it may be required for employment, confirmation/ promotion, or as a benefit which corroborated in Egypt [21] where study participants reported having no health insurance as compared to the control group.

Taking a bath after work was practiced by 80% of the respondents in this study which is encouraging and shows some degree of hygiene especially bearing in mind that they come in contact with other people while transporting themselves home. This is consistent with findings in in Gaza [20] which reported similar figures. In South Africa [19] however, all study participants were reported taking a bath after the day's work; which may be alluded to the small sample size of the study.

Previous studies did not consider associations between use of PPEs and education or length of stay on the job. However, this study showed that there was a statistically significant association between number of years on job and use of PPE. Previous studies did not explore any association between these variables.

CONCLUSION

This study provides an insight into the socioeconomic characteristics, implications and safety practices among waste pickers. There are huge economic opportunities in recovery of items from wastes at Olusosun dumpsite and waste pickers were not adequately protected from the hazards associated with the job. It is recommended that government should harness the great economic opportunity that resides in recovery from waste by forming partnerships with other private bodies and recognizes the waste pickers (though an informal group) and include them in waste management program. Sorting of wastes at points of generation be encouraged and implemented throughout Lagos state which also make the wastes less hazardous aside the economic benefit. Waste pickers should be totally disallowed from sleeping at

dumpsites with a possible social welfare made available to this group of workers. Further enlightenment of waste pickers especially on hazards related to the job is recommended as individuals enter the pool and different times and use of PPEs should be enforced at the dumpsite.

Conflicts of Interest

Authors declare no conflicts of interest in this study

Funding statement

The authors did not receive funding from any Organization or institution for this study. The study was solely funded by the authors.

ACKNOWLEDGEMENT

Authors would like to thank the executives of the waste pickers/ scavengers association at the dumpsite that made accessibility to the waste pickers easy. Also, Dr. C.O Adeyemi is acknowledged for the editorial inputs to the manuscript and presentation of the paper at APHPN conference.

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