Original Research Article

Work-Related~~Work Related~~ and Behavioral Characteristics of Formal~~formal~~ and informal waste collectors in Rivers State

ABSTRACT

The study assessed~~Study was performed to assess~~ the work-related~~work related~~ and behavioral characteristics of formal and informal waste collectors in Rivers State, Nigeria. A cross-sectional~~cross sectional~~ design was employed for this study. 314 formal and 314 informal waste collection workers were sampled for the study using a multistage sampling technique. Data were collected using a self-designed pretested questionnaire, observational checklists, clinical, laboratory measurements and a study guide. Data analysis was done using the Statistical Package for Social Sciences (SPSS) version 21 to analyze the data collected from respondents. The finding~~Finding~~ shows that ~~that~~ at p = 0.05, the calculated~~calculate~~ chi-square value of 455.661 with the degree of freedom 92 was more than the critical chi-square value of 115.390. Thus, the null hypothesis is rejected and the alternative hypothesis is accepted, which states ~~that, there is~~ a significant difference in the work-related~~work related~~ and behavioral characteristics among formal and informal waste collectors in Rivers State. However, training and retraining ~~of~~ the informal waste collectors, enforcing ~~and enforcement of use of~~ personal protective equipment, and~~as well as~~ counselling on using~~the use~~ hard drugs will go a long way in arresting their poor behavior.

Keywords: Formal waste Collectors, Informal waste collectors, behavioral characteristics, Personal Protective equipment

1. INTRODUCTION

It is well recognized that waste collection workers positively impact~~make a positive impact on~~ the environment, hea

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economy of any community or country. The nature of the job allows for the transformation of waste to reusable materials that enhances economic productivity, prevents environmental degradation and protects the health of the public [4]. The working conditions of waste collection workers, such as exposure to decaying organic wastes, ~~and~~ toxic medical wastes, harsh weather conditions, etc. ~~is~~, however unsafe and hazardous, put ~~and puts~~ the workers in a marginalized position, consequently affecting their mental, physical, social and social and economic wellbeing [4].

Additionally, ~~there are~~ some work and individual behavioural characteristics ~~that~~ can further increase the health risks of people in this occupation. These work characteristics include; number of working hours in a day, the number of days worked in a week and job-related training, etc., while the behavioural characteristics associated with the job are; alcohol use, cigarette use, substance~~substances~~ abuse, job-related stress, sleep disturbance, etc.

Misuse of these psychoactive substances is a behavioural problem that may lead to absence from work, illness, stress-related problems and engaging with illegal~~engagement with illegal activities of~~ sourcing for these substances to use during working hours [5]. Qualitative~~A qualitative~~ research conducted by [6] in South Africa investigated the rationale behind substance abuse among waste collection workers. The researchers described substance abuse as; the use of psychoactive substances that limits the user from achieving the required responsibilities at the workplace, school or home and causes social or interpersonal problems. They identified that waste collection workers are engaged in job activities that are physically and psychologically hazardous and demanding, and the use of alcohol and psychoactive substances are coping mechanisms for the workers. The researchers also identified that these psychoactive substances are used to cope with the stigma they encounter due to the nature of the job.

In a cross-sectional study conducted by [3] in Ethiopia to determine the prevalence and associated factors of occupational injuries among municipal solid waste collectors, 73.6% of the participants worked for more than five days ~~in~~ a week, 68.9% had no job-related training, 65.2% reported the use of alcohol during work hours, 5.8% and 3.7% reported substance abuse and cigarettes smoking while on the job respectively, 62.3% stated that they had job satisfaction, 40.9% had sleep disturbance, and 33% of the participants had job-related stress. The researchers observed a significant association between sleep disturbance and the occurrence of occupational injuries among waste collection workers. Job stress was also significantly associated with a history of occupational injuries.

A similar studyconducted in Lagos State of Nigeria to assess the working conditions and career aspirations of waste collection workers reported that irrespective of the fact that the waste pickers have flexible working hours and can choose their ~~own~~ work schedules, 89% of the waste collection workers are engaged for 5 to 6 days per week while 64% of them spend between 10 to 14 hours in a day at work [7]. These workplace and behavioural characteristics can affect the workers' physical, mental and social health and limit their work efficiency

1.2 AIM

This research aims~~The aim of this research is~~ to assess the work-related~~work related~~ and behavioural characteristics among formal and informal waste collectors in Rivers State.

1.3 OBJECTIVE

Compare the work-related~~work related~~ and behavioural characteristics among formal and informal waste collectors in Rivers State

1.4 RESEARCH QUESTION

What are the differences in work-related~~work related~~ and behavioural characteristics of formal and informal waste collectors in Rivers State?

1.4 HYPOTHESIS

H0 = There is no significant difference in work-related~~work related~~ and behavioural characteristics among formal and informal waste collectors in Rivers State.

H1 = There is a significant difference in work-related~~work related~~ and behavioural characteristics among formal and informal waste collectors in Rivers State.

1.5 STATEMENT OF PROBLEM

Their exposure raises the danger of respiratory illness for waste collectors~~The danger of respiratory illness for waste collectors is raised by their exposure~~ to factors such as car pollution, poor weather, and germs. Several of the sustainable development objectives, such as decent jobs, clean water and sanitation, improved health and well-being, and decreased inequality, are jeopardized by the issues and health concerns that waste collectors encounter when sorting through trash. Without proper PPE, scavengers put themselves at risk for microbiological illnesses, bites, and wounds. Workers in the waste industry are vulnerable to various~~a variety of~~ illnesses, necessitating more medical screening and health education. There are negative effects on human health and ~~on~~ progress toward SDGs due to the practice of scavenging solid waste. So, this research aimed~~the purpose of this research was~~ to evaluate the behaviors, skills, information, and awareness of health risks among solid waste collectors in Rivers state.

2. MATERIAL AND METHODS

2.1 STUDY AREA

The research was carried out in Rivers state, which is located in South-South Nigeria. The state was created in 1967, and its borders are as follows: to the south, the Atlantic Ocean; to the north, the states of Imo, Abia, and Anambra; to the east, the state of Akwa Ibom; and to the west, the states of Bayelsa and Delta. Ikwerre, Ibani, Opobo, Eleme, Okrika, Kalabari, Etche, Ogba, Ogoni, and Engenni are some ~~of the~~ indigenous peoples that call that region home. There are also

Okrika, Eleme, and Okrika (Obenade et al., 2020).

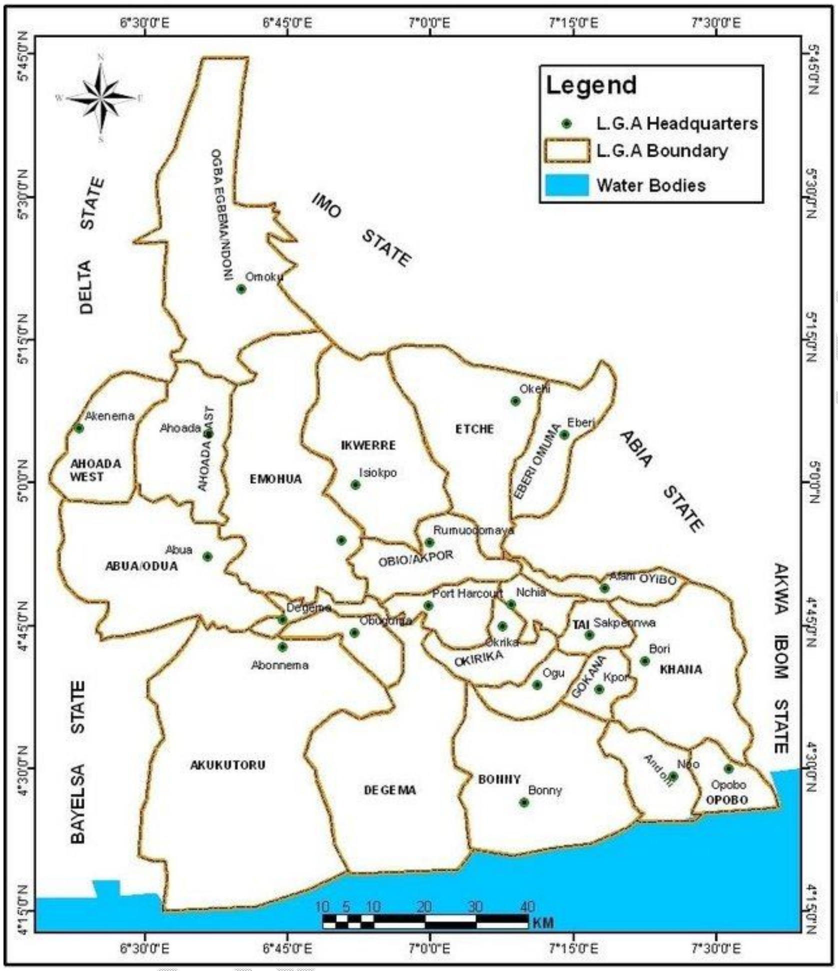

Figure 1: Map of Rivers State of Nigeria. Source: (Ndubueze-Ogaraku et al., 2017)

The State is home to over 40% of Nigeria's crude oil production and is well known for its abundant crude oil and natural gas reserves (Obenade et al., 2020). A handful of airports, ~~many~~ industrial estates, and two sizable oil refineries may all be found in the area.

2.2 Research Design

This study used a concurrent nested mixed-method design. The quantitative part of the research consisted of ~~a~~ comparative cross-sectional analysis. The cross-sectional comparison analysis was utilized to compare and contrast the working conditions of both professional and informal waste pickers. This study's qualitative section, a phenomenological study design, sheds~~shed~~ light on the perspectives of waste collection employees regarding~~with regards to~~ the health risks they face on the job through~~by means of~~ in-depth interviews and focus groups. Some researchers [2]

2.2.1 Sampling Method

A combination of multistage sampling technique and snowball sampling method was~~were~~ used for this study to select participants in the formal waste management organization in Rivers State and informal waste collectors. Sampling was done using these two LGAs, largely comprising~~which largely make up~~ Port Harcourt Metropolis because~~for reasons that~~ RIWAMA operates mainly in Port Harcourt and Obio-ApkorLGAs,.;

The sample~~Sample~~ size was determined using a comparison of two proportions according to [1]

Sample size = $\frac{2(Z_\alpha+Z_\beta)^2 P\ (1-P)}{(p_1-p_2)^2}$

Where Zα is the Standard normal deviation~~deviate~~ corresponding to the required significant level of 5% =1.96 (2-tailed test), Zβ is the 80% statistical power, ~~which is~~ and the average standard~~standard normal~~deviation~~deviate~~corresponds~~corresponding~~ to β=0.84.

P is the Pooled Prevalence = Arithmetic average of two proportions=$\frac{p_1-p_2}{2}$

p1 = proportion of informal waste collectors estimated to have a respiratory symptom (cough)

p2 = proportion of formal waste collectors estimated to have a respiratory symptom (cough)

3. RESULTS AND DISCUSSION

3.1 Socio-Demographic Data

Table 1 shows the socio-demographic characteristics of the respondents. Among the organized waste collectors, their mean age was 35 years and about 43 (13.7%) out of 314 respondents were aged between 21 and 30 years, while 171 (54.5%) were aged between 31 and 40 years and 100 (31.8%) respondents were aged 41 years and above. ~~A total of~~ 39 (12.4%) females and 275 (87.6%) males made up the sex composition of the organized waste collection workers. Concerning the marital status of the organized waste collectors, there were 126 (40.1%) singles, 160 (51.0%) married and 5 (1.6%) widowed and 23 (7.3%) ~~are~~ divorced. Other demographics are presented in detail~~details~~ in Table~~table~~1 below

Table 1: Socio-Demographic Characteristics of study participants

Variables	Organized (n=314)	Informal (n=314)
	Frequency (%)	Frequency (%)
Age (Years)		
20 & below	0 (0.0)	3 (1.0)
21 – 30	43 (13.7)	56 (17.8)
31- 40	171 (54.5)	62 (51.6)
41 & above	100 (31.8)	93 (29.6)
Sex		
Female	39 (12.4)	1 (22.6)
Male	275 (87.6)	243 (77.4)
Marital Status		
Widowed	5 (1.6)	6 (1.9)
Divorced	23 (7.3)	51 (16.2)
Single	126 (40.1)	136 (43.3)
Married	160 (51.0)	121 (38.5)
Religion		
Christian	314 (100.0)	314 (100.0)

Table 1 continued

Educational Level		
None	6 (1.9)	8 (2.5)
Primary	25 (8.0)	126 (40.1)
Secondary	179 (57.0)	152 (48.4)
Tertiary	104 (33.1)	28 (8.9)
Family Size		
3 & below	185 (58.9)	208 (66.2)
4-6	121 (38.5)	106 (33.8)

7 & above	8 (2.6)	0 (0.0)
Place of Residence		
Rural	109 (34.7)	157 (50.0)
Urban	205 (65.3)	157 (50.0)
Presence of chronic disease		
Yes	136 (43.3)	32(10.2)
No	178 (56.7)	282 (89.8)

Table 2 shows the work-related and behavioural characteristics among formal and informal waste collectors in Rivers State. There was a difference in proportion among the formal and informal workers concerning the following variables; “number of years engaged in this job”, where 83.8% of the formal workers and 49.7% of the informal workers had been engaged in the job for more than six years. The proportions had~~There was~~ a statistically significant difference ~~in the proportions~~ (p = 0.001). Only 61.5% of the formal waste collection workers had received some training about the job. In contrast,~~, while~~ no informal worker had received any training on the job, and there was a statistically significant difference in the proportion. About 96.2% and 82.2% of the formal and informal waste collectors worked ~~for~~ more than 5 days ~~in~~ a week, respectively, and this difference in proportion was significant, p=0.001. There was no significant difference in proportion among formal and informal waste collectors concerning the average daily work hours~~hours of daily work~~, engagement in night shift work and substance abuse while on duty. However, there was a significant difference in proportion among formal and informal workers concerning drinking alcohol while on duty [formal (59.2%); informal (100%); p=0.001], smoking cigarettes while on duty [formal (46.2%); informal (68.5%); p=0.001], and frequency of use of PPE [formal (73.6%); informal (18.5%); p=0.001].

Table 2: Work-Related and Behavioural Characteristics among Formal and Informal Waste Collection Workers

Items	Formal n (%)	Informal n (%)	Chi sq	P-Value
Number of years engaged in this job				
=<5 years	51 (16.2)	158 (50.3)	82.014	0.001*
=>6 years	263 (83.8)	156 (49.7)		
Received any training for the job				

No	121 (38.5)	314 (100.0)	278.63	0.001*
Yes	193 (61.5)	0 (0.0)		
Average number of days worked weekly				
=<5 days/week	12 (3.8)	56 (17.8)	31.928	0.001*
=>6 days/week	302 (96.2)	258 (82.2)		
Average number of hours worked daily				
=<8 hours	127 (40.4)	112 (35.7)	1.52	0.218
=>9 hours	187 (59.6)	202 (64.3)		
Engaged in night shift work				
No	97 (30.9)	92 (29.3)	0.189	0.664
Yes	217 (69.1)	222 (70.7)		
Drink alcohol while on duty				
No	128 (40.8)	0 (0.0)	160.768	0.001*
Yes	186 (59.2)	314 (100.0)		
Smoke cigarettes while on duty				
No	169 (53.8)	99 (31.5)	31.895	0.001*
Yes	145 (46.2)	215 (68.5)		
Substance abuse while on duty				
No	293 (93.3)	284 (90.4)	1.729	0.189
Yes	21 (6.7)	30 (9.6)		
How often do you use PPE				
Never	0 (0.0)	60 (19.1)		
Sometimes	83 (26.4)	196 (62.4)	209.328	0.001*
Always	231 (73.6)	58 (18.5)		

Table 3 shows the use of PPEs among formal and informal waste collectors in Rivers State. There was a difference in proportion among the formal and informal workers concerning the following variables; use of boots always [formal (77.1%); informal (32.2%); p=0.001], use of hand gloves always [formal (24.2%); informal (14.3%); p=0.001], and use of coverall always [formal (70.4%); informal (19.7%); p=0.001].

Table 3 also shows other work-related and behavioural characteristics of the formal and informal waste collection workers. There was significant difference in proportions concerning; feeling stressed from the job [formal (95.5%); informal (64.6%); p=0.001], satisfied with job [formal (55.1%); informal (36.3%); p=0.001], ever experienced violence/abuse at work [formal (66.6%); informal (84.1%); p=0.001], type of violence experienced [formal (29.6%); informal (33.8%); p=0.001], and type of perpetrator [formal (11.5.1%); informal (19.7%); p=0.001].

Table 3: Work-Related and Behavioural Characteristics among Formal and Informal Waste Collection Workers (use of PPEs by formal and informal waste collectors

Items	Formal n(%)	Informal n(%)	Chi sq	p-value
Use of face mask				
Never	311 (99.0)	306 (97.5)	2.313	0.222
Sometimes	3 (1.0)	8 (2.50)		
Use of respirators				
Never	311 (99.0)	312 (99.4)	0.202	0.653
Sometimes	3 (1.0)	2 (0.6)		
Use of googles				
Never	307 (97.8)	311 (99.0)	1.626	0.202
Sometimes	7 (2.2)	3 (1.0)		
Use of boots				
Never	1 (0.3)	14 (4.5)		
Sometimes	71 (22.6)	199 (63.4)	129.91	0.001*
Always	242 (77.1)	101 (32.2)		
Use of hand gloves				
Never	12 (3.8)	54 (17.2)	34.944	0.001*
Sometimes	226 (72.0)	215 (68.5)		
Always	76 (24.2)	45 (14.3)		

Wear coveralls				
Never	1 (0.3)	111 (35.4)	207.673	0.001*
Sometimes	92 (29.3)	141 (44.9)		
Always	221 (70.4)	62 (19.7)		

Table 3 (continued): Work-Related and Behavioural Characteristics among Formal and Informal Waste Collection Workers use of PPEs by formal and informal waste collectors

Items	Formal n (%)	Informal n (%)	Chi sq	p-value
Feel stressed from job				
No	14 (4.5)	111 (35.4)	93.978	0.001*
Yes	300 (95.5)	203 (64.6)		
Satisfied with job				
No	141 (44.9)	200 (63.7)	22.337	0.001
Yes	173 (55.1)	114 (36.3)		
Ever experienced violence/abuse at work				
No	105 (33.4)	50 (15.9)	25.911	0.001*
Yes	209 (66.6)	264 (84.1)		
Type of violence experienced (n = 473)				
Physical	11 (3.5)	11 (3.5)	27.365	0.001*
Verbal	105 (33.4)	147 (46.8)		
Both	93 (29.6)	106 (33.8)		
Perpetrator (n=473)				
Co-worker	30 (9.6)	49 (15.6)		
Non-co-worker	143 (45.5)	153 (48.7)		
Both	36 (11.5)	62 (19.7)	31.322	0.001*

3.1.1 Hypothesis: There is no difference in work-related~~work related~~ and behavioural characteristics among formal and informal waste collectors in Rivers State.

Table 4 shows that at p = 0.05, the calculated~~calculate~~ chi-square value of 455.661 with degree of freedom 92 was more than the critical chi-square value of 115.390. Thus, the null hypothesis is rejected and the alternative hypothesis is accepted, which states ~~that, there is~~ a significant difference in the work-related~~work related~~ and behavioural characteristics among formal and informal waste collectors in Rivers State.

Table 4: Chi-Square Tests for work-related~~work related~~ and Behavioural~~behavioural~~ characteristics

	Work-related~~Work related~~/Behavioural Characteristics
Chi-Square	455.661a
Df	92
Asymp. Sig.	.000

93 cells (100.0%) have expected frequencies less than 5. The minimum expected cell frequency is 3.4.

3.2 Work-related~~Work related~~ and behavioural characteristics of formal and informal waste collectors

There was a significant difference between the formal and informal workers in the number of years worked, history of training for the job, number of days worked, smoking cigarettes and drinking alcohol on duty, and use of personal protective equipment. These significant differences ~~only~~ show that ~~the~~ informal waste collectors may have a higher risk of encountering hazards and health complications ~~while~~ at work. This risk is also seen in the use of specific personal protective equipment, where a significant difference in the use of boots, hand gloves and coveralls was identified, and the formal waste collectors used more personal protective equipment than~~compared to~~ the informal waste collectors. The low level of education, lack of training for the job, smoking cigarettes on duty, and ingesting~~ingestion of~~ alcohol on duty may contribute to the lack of safety consciousness and poor use of PPEs among ~~the~~ informal waste collectors. This finding is similar to their research reports made by [5] and [6]~~in their research~~. The results~~findings~~ support the fact that using~~the use of~~ alcohol during work time can reduce the ability of a worker to accomplish the required tasks or comply with the necessary safety measures. However, other researchers have noted that ~~the~~ psychoactive~~psycho active~~ substances relieve stress~~are used as a stress relief mechanism~~. The informal workers significantly experienced violence while doing their jobs compared to the formal workers, however the formal waste collectors feel more stressed and dissatisfied with their jobs. This may be due to the scheduled timing they must adhere to and the number of years on the job. Overall, the significant difference in work-related~~work related~~ characteristics between the formal and informal waste collection workers reflects on their hazard exposure and health status

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4. **Conclusion**

Major findings showed that the informal waste collectors had little or no job training when compared to the formal staff of the waste collection agency in Rivers State which made the informal waste collectors more exposed to health hazards and risks~~risk~~ than the formal waste collectors. Informal workers had no history of training for the job, engaged in smoking of cigarettes and drinking alcohol on duty and poor or no use of personal protective equipment.Most of the workers in both categories of the waste handlers in Rivers State had worked more than five days weekly. However, training and retraining of the informal waste collectors and enforcement of use of personal protective equipment as well as counselling on the use hard drugs will go a long way in arresting their poor behaviour.

Consent

No Competing Interest among the Authors

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