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Perceived Knowledge and Attitude of Ijebu-Ode Inhabitants Regarding Waste Disposal and Management Problems: A Study of Ijebu-Ode Township, Ogun State, Nigeria

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Abstract

Waste management has become a perennial problem confronting all tiers of government in Nigeria in recent times. This problem has taken monumental dimensions most especially in urban centres; man's unguided development and ineffective waste management especially in the urban centres has resulted in degraded urban environments. As it stands, effective waste management in our urban centres needs to be properly addressed to achieving sustainable urban development. The study sought to identify the knowledge regarding waste disposal and management problems of the inhabitants of Ijebu-ode, Township, Ogun State, Nigeria. The study used 250 inhabitants of Ijebu-Ode Township using a simple random sampling procedure. The instrument used was a validated questionnaire with likert type scale, interview and personal observation. Data collected through questionnaire were analyzed using frequency counts and simple percentages, while the three hypotheses generated for the study were tested using Chi-square statistic at 0.05 significant level. All the hypotheses were accepted as there were no significant difference in the knowledge of respondents with respect to waste disposal and management problems of Ijebu-Ode inhabitants. The study recommend that there is urgent need to increase the numerical strength of public health officers in order to monitor waste disposal and attainment of a clean environment. Inclusively, the government should provide adequate fund and necessary equipment and machineries for effective and efficient waste disposal management.

1. INTRODUCTION

One of the greatest environmental problems that pose a grave challenge to urban centres is waste disposal management. Today, the issue of waste disposal constitutes a major urban environmental paralysis; a clog in the wheel of progress in terms of urban environmental purity and sanitation. The deterioration of urban environment in terms of irresponsibly dumped and accumulated waste is most apparent in our urban lives and blighted environment have often been cited and voted as contributing causes of the Nigeria urban decay [1]. In Ijebu-Ode town, waste problem have gained notoriety because of its visibility and general degradation of the environment. It is a common site to find mounds of waste in many places, besides, the wastes are scattered in gutters, street corners and road sides of Ijebu-Ode Township.

A major consequence of rapid urbanization and industrialization is the growing generation of waste which has continued to pose serious problems due to enormous waste generated in every municipality like Ijebu-Ode town, the focus of this research project. The problem of waste is critical as the disposal facilities have not been able to keep pace with the quantum of waste been generated; hence, there is no formal waste collection system [2, 3]. Ijebu-Ode municipal waste authorities face unprecedented challenges in managing their waste and these has continued to pose serious challenges due to the absence of an appropriate and organized waste disposal management culture and technology which arises largely from financial constraints, inadequate skilled manpower, and this is due to the fact that Ijebu-Ode town has almost choked up as a result of the process of urbanization and industrialization which is one of the major features of the 21st century [4].

Ijebu Ode is a city located in located in Ijebu-Ode Local Government Area of Ogun State, South-Western Nigeria, with an estimated population of 222, 653 [5]. Ijebu-Ode local Government covers an area of 13,394 hectares of land, making it one of the largest local Governments in the state. It is located between latitude $6^0$49'N and 15^0N, and between longitude $3^0$55'E and 05^0E of the Greenwich meridian. It is bounded in the North by the Ijebu-East local Government, while in the South by Lagos State and Odogbolu Local Government to the Western side of the local Government. The climate condition experiences in Ijebu-Ode region mirrors the climate of Nigeria. Ijebu-Ode experiences humid tropical climate characterized with two distinct seasons: the rainy season (March/April to October/November) and dry season (November to March). Ijebu-Ode has an average temperature of 30 ^{o}C throughout the year and an annual range between 6 ^{o}C – 10 ^{o}C [6, 7]. Ijebu-Ode is situated on an undulating topography with an average height of 10m 700ft above the sea level. It is underlain by igneous and sedimentary rocks of the plagioclase type [8].

From all indications, solid waste management problems in Ijebu-Ode remain more persistent and pronounced when compared with several other towns in Ogun State and many Nigerian cities. This persistence can be attributed to a combination of historical, socio-economic, spatial, infrastructural, and institutional factors that uniquely characterize the town [1, 6, 8]. Firstly, rapid population growth and unplanned urban expansion in Ijebu-Ode have outpaced the capacity of municipal waste management systems. The town has experienced significant urbanization without a corresponding improvement in land-use planning and waste infrastructure [2, 7]. Many residential areas, especially older core neighborhoods, developed organically with narrow road networks, making access for waste collection vehicles difficult or impossible [1, 8]. In contrast, newer towns and state-planned urban centers in Ogun State benefit from relatively better road layouts and planned residential schemes, which facilitate more efficient waste collection [3].

Housing conditions in Ijebu-Ode contribute significantly to waste management challenges. A high proportion of residents live in overcrowded and poorly maintained housing units lacking adequate sanitation facilities [1]. The prevalence of informal housing arrangements increases indiscriminate waste disposal, as households often lack designated waste storage spaces [6]. This situation is compounded by limited access to potable water, which encourages unsanitary practices and the accumulation of refuse around residential areas, thereby worsening environmental health conditions [4]. Institutional and governance limitations play a critical role. Waste management agencies operating in Ijebu-Ode often face constraints related to inadequate funding, insufficient manpower, and limited operational equipment [5, 7]. These challenges reduce the frequency and coverage of waste collection services, leading to the proliferation of illegal dumpsites [8]. Compared to larger cities within Ogun State that receive greater fiscal attention or private sector participation, Ijebu-Ode remains underserved in terms of modern waste management interventions [6].

In addition, socio-economic characteristics of the population further exacerbate the problem. A substantial segment of the town's residents engage in informal economic activities, which generate diverse waste streams without structured disposal mechanisms [6]. Low household income levels also

limit residents' willingness and ability to pay for waste collection services, thereby reducing cost recovery for waste management agencies and weakening service sustainability [7]. Public awareness and environmental education remain relatively weak. Although residents are generally aware of the health implications of poor waste management, compliance with waste disposal regulations is low due to ineffective enforcement and limited community participation [3, 4]. In other cities where waste management has improved, stronger community engagement, public enlightenment campaigns, and enforcement mechanisms have proven effective in changing waste disposal behavior [7]. The interaction between inadequate housing, poor water supply, and ineffective waste management creates a reinforcing cycle of environmental degradation in Ijebu-Ode. Unsanitary neighborhoods become hotspots for indiscriminate dumping, blocked drainage channels, and recurrent flooding, further complicating waste evacuation efforts [2, 8]. This interconnected nature of urban problems explains why waste management challenges in Ijebu-Ode persist despite ongoing interventions by municipal authorities [6].

Therefore, the health impacts of the latter problem cannot be farfetched as the incidence of typhoid and malaria fever attacks the residents which can be attributed largely to deterioration of their immediate environment. Furthermore, due to rapid urbanization, the provision of infrastructural facilities is not enough to serve the growing population. In effect, most of the available services are often overstretched and this has posed a serious problem to Ijebu-Ode inhabitants. Waste management in Ijebu-Ode town have defiled various solutions mainly due to poor infrastructural facilities, inadequate and untrained manpower, meagre finance and burgeoning urban population, coupled with lack of adequate awareness on part of the general public of Ijebu-Ode town on management of waste from various sources.

STATEMENT OF THE PROBLEM

Indiscriminate waste disposal remains a significant environmental challenge in Ijebu-Ode, where heaps of refuse are visible in many parts of the town. A considerable proportion of the waste generated is disposed of along roadsides, at unauthorized dump sites, in waterways, and in open spaces, thereby reducing environmental quality and cleanliness. Improper waste collection and disposal pose serious threats to public health and have adverse effects on flora, fauna, and the overall environment [9, 10]. The current state of waste management in Ijebu-Ode has been attributed to several factors, including inadequate waste management facilities, insufficient funding, weak policy implementation, and unsustainable consumption patterns. According to [11], challenges in effective waste management are often linked to inefficiencies in social service delivery, which result in delays in waste clearance. These challenges may stem from equipment breakdowns, poor maintenance of waste storage facilities, deteriorated urban roads, and inconsistencies in the designation and management of sanitary landfill sites.

Despite growing attention to waste management issues, challenges related to waste collection, disposal, processing, treatment, recycling, and utilization persist. These challenges are not only infrastructural but also behavioral in nature, as residents' attitudes and waste disposal practices play an important role in shaping waste management outcomes. Studies suggest that waste disposal habits, alongside

inadequate equipment and institutional constraints, continue to hinder effective waste management in Ijebu-Ode [12]. The consequences of these challenges include blocked drainage systems, flooding, air pollution, public health risks, and a decline in environmental aesthetics and community pride.

OBJECTIVES OF THE STUDY

The main objective of this study is to assess the knowledge, attitudes, and practices of residents regarding waste disposal and management in Ijebu-Ode Township.

The study also seeks to:

1. Examine the effectiveness of current waste management practices in Ijebu-Ode Township.

2. Determine the relationship between the availability of waste management personnel and the effectiveness of waste management.

3. Assess the impact of monthly environmental sanitation exercises on the sanitation situation in Ijebu-Ode Township.

4. Evaluate the role of waste managers and the provision of resources in improving waste disposal and management.

RESEARCH QUESTIONS

1. What is the level of knowledge and awareness of residents regarding waste disposal and management in Ijebu-Ode Township?

2. What are the attitudes and perceptions of residents toward proper waste management practices?

3. How effective are the current waste management practices in Ijebu-Ode Township?

4. To what extent does the availability of waste management personnel influence the effectiveness of waste management?

5. How do waste managers and the provision of resources contribute to effective waste disposal and management in Ijebu-Ode Township?

RESEARCH HYPOTHESES

H_0: Waste management in Ijebu-Ode Township is not effective.

H_1: Waste management in Ijebu-Ode Township is effective.

H_0: There is no significant relationship between the availability of waste management personnel and the effectiveness of waste management.

H_1: There is a significant relationship between the availability of waste management personnel and the effectiveness of waste management.

H_0: Monthly environmental sanitation exercises have no significant impact on the sanitation situation.

H_1: Monthly environmental sanitation exercises have a significant impact on the sanitation situation.

H_0: The contributions of waste managers and the provision of resources do not significantly influence waste disposal and management.

H_1: The contributions of waste managers and the provision of resources significantly influence waste disposal and management.

2. MATERIALS AND METHODOLOGY

The study employed a descriptive survey method to assess the knowledge regarding waste disposal and management problems in Ijebu-ode Township, Ogun state, Nigeria. The target population comprised of the residents of five randomly selected locations of Ijebu-Ode Township which are, Igbeba area/ Oke-Aje Market, Ondo-Road, Balogun Kuku Road, Omo-Owo Road and Ereko Road. The sampling method used for this study was simple random sampling while the sample population size consisted of Two hundred and Fifty (250) respondents from the study area. The questionnaire contained closed and open ended questions and they were self – administered 250 questionnaires. All the responses from each of the completed questionnaire were coded and analyzed. The data collected were computed and analyzed using frequency counts, simple percentage analysis and Chi-Square statistical method. Simple percentage analysis was used to explain the demographic characteristics of the respondents.

3. RESULTS AND DISCUSSION

3.1 Analysis of returned questionnaires

Fifty (50) questionnaires were administered in each of the selected locations (as shown in Table 1), this is due to the geographical areas having dense population and this has contributed to massive waste generation by the inhabitants of the various geographical locations in Ijebu-Ode Township. A total of Twenty (20) copies of the questionnaire were not properly filled and thus were discarded. Therefore, data analysis for this research was exclusively based on the information derived from Two hundred and thirty (230) copies of the questionnaire that were correctly filled and retrieved.

Table 1: Analysis of Returned Questionnaires

Randomly selected locations in Ijebu-Ode	Numbers of questionnaires filled	Numbers correctly filled	Numbers incorrectly filled	Simple % correctly filled	Simple % incorrectly filled
Igbeba Area/ Oke-Aje Market	50	43	7	86%	14%
Ondo-Road	50	47	3	94%	6%
Balogun Kuku Road	50	49	1	98%	2%
Omo-Owo Road	50	46	4	92%	8%
Ereko Road	50	45	5	90%	10%
TOTAL	**250**	**230**	**20**	**92%**	**8%**

3.2 Demographic characteristics of the Ijebu-ode inhabitants

The demographic characteristics of the 250 Ijebu-ode township inhabitants are shown in Table 2. 28.3% and 33.04% were respectively between the 40 – 49 and 50 above age bracket. This indicate that majority of the people that were involved in waste disposal are mainly of middle and the aged people. Thirty-nine (39) of the respondents representing 17% had no formal education, forty-four (44) of the respondents representing 19.1% obtained primary school leaving certificate, forty-five (45) of the respondents representing 19.6% had SSCE/O 'Level certificate, forty-two (42) of the respondents representing 18.3% had OND/NCE, and forty-eight (48) of the respondents representing 20.9% had B.Sc./HND, ten (10) of the respondents representing 4.3% had M.Sc./MA and two (2) of the respondents representing 0.87% had other educational qualifications. Fifty-seven (57) respondents representing 24.8% were students, thirty-four (34) respondents representing 14.8% were traders, forty-eight (48) respondents representing 20.9% were civil servants, sixty-three (63) respondents representing 27.4% were self-employed and twenty-eight (28) of the respondents representing 12.1% were others i.e. unemployed. However, Table 2 which describes employment distribution does not reflect educational background of the respondents.

Table 2: Demographic Characteristics of the Ijebu-Ode inhabitants

S/N	Variables	Frequency N=230	Simple %
1.	Age (Years)		
	20 – 29	40	17.4
	30 – 39	49	21.3
	40 – 49	65	28.3
	50 - above	76	33.04
	Total	230	100
2.	Level of Education		
	No formal Education	39	17%
	Pry. School leaving cert.	44	19.1%
	SSCE	45	19.6%
	OND/NCE	42	18.3%
	B.Sc./HND	48	20.9
	M.Sc./MA	10	4.3%
	Others	2	0.87%
	Total	230	100
3.	Employment status		
	Student	57	24.8%
	Trading	34	14.8%
	Civil Servant	48	20.9%
	Self Employed	63	27.4%
	Others	28	12.1%
	Total	230	100

3.3. Common waste disposal and management problems

Table 3 shows the common waste disposal and management problems, 77% and 19.1% strongly agreed and agreed respectively that environmental awareness is an essential component of effective waste management, while 1.3% and 2.6% strongly disagreed and disagreed. 41.7% and 23.5% strongly agreed and agreed respectively to the claim that residents of Ijebu-Ode Township do not have regular doses of environmental education on waste management. The Monthly environmental sanitation exercise has positively impacted on the level of environmental quality in Ijebu-Ode Town as strongly agreed and agreed by 53% and 12.2% respectively, while 23.5% and 11.3% strongly disagreed and disagreed. 59.6%

and 22.6% strongly agreed and agreed respectively that the staff strength of environmental sanitation workers in Ijebu-Ode Township is inadequate for proper waste management, while 7.4% and 10.4% strongly disagreed and disagreed. Influx of people into Ijebu-Ode Town has tremendously contributed to massive waste generation as strongly agreed and agreed respectively by 49.1% and 30%, and 10% strongly disagreed and disagreed respectively. 67.8% and 18.7% strongly agreed and agreed that many diseases can be prevented if wastes are properly managed. Refuse containers in Ijebu-Ode Township are inadequate and the available ones were located far away from the users as identified by 50.9% and 28.7% who strongly agreed and agreed respectively, while 10.9% and 9.6% strongly disagreed and disagreed. 77.4% and 11.3% strongly agreed and agreed that residents of Ijebu-Ode Township dump refuse in the surrounding areas when the skips in their neighborhood are full to the brim, while 3.9% and 7.4% strongly disagreed and disagreed, respectively. Refuse skips are seen with refuse overflow in strategic locations because refuse collectors do not empty them regularly as strongly agreed and agreed by 55.2% and 25.7% respectively, while 7.8% and 11.3% strongly disagreed and disagreed.

Table 3: Responses on Waste Disposal and Management Problems in Ijebu-Ode Township (N = 230)

S/N	Variables	SA (Freq, %)	A (Freq, %)	SD (Freq, %)	D (Freq, %)
1	Environmental awareness is an essential component of effective waste management	177, 77%	44, 19.1%	3, 1.3%	6, 2.6%
2	Residents of Ijebu-Ode Township do not have regular doses of environmental education on waste management	96, 41.7%	54, 23.5%	36, 15.7%	44, 19.1%
3	The Monthly environmental sanitation exercise has positively impacted the level of environmental quality in Ijebu-Ode Town	122, 53.0%	28, 12.2%	54, 23.5%	26, 11.3%
4	The staff strength of Environmental sanitation workers in Ijebu-Ode Township is inadequate for proper waste management	137, 59.6%	52, 22.6%	17, 7.4%	24, 10.4%
5	A single waste management organization can oversee the operational service of waste management in Ijebu-Ode Township	93, 40.4%	42, 18.3%	27, 11.7%	68, 29.6%
6	Influx of people into Ijebu-Ode Town has tremendously contributed to massive waste generation	113, 49.1%	69, 30%	23, 10%	25, 10.9%
7	Many diseases can be prevented if wastes are properly managed	156, 67.8%	43, 18.7%	17, 7.4%	14, 6.1%
8	Wastes should be disposed-off in designated collection points	132, 53.4%	73, 31.7%	17, 7.4%	8, 3.5%
9	Refuse containers in Ijebu-Ode Township are inadequate and the available ones are located far from the users	117, 50.9%	66, 28.7%	25, 10.9%	22, 9.6%
10	Government is not doing enough to educate Ijebu-Ode residents on waste management	97, 42.2%	42, 18.3%	56, 24.3%	35, 15.2%
11	Residents of Ijebu-Ode Township dump refuse in the surrounding areas when the skips in their neighborhood are full	178, 77.4%	26, 11.3%	9, 3.9%	17, 7.4%
12	Waste dump sites are breeding grounds for disease vectors	157, 68.3%	71, 30.9%	–, –	2, 0.87%
13	Refuse skips are seen with refuse overflow in strategic locations because refuse collectors do not empty them regularly	127, 55.2%	59, 25.7%	18, 7.8%	26, 11.3%
14	Residents of Ijebu-Ode Township need to cooperate with environmental health workers to achieve proper waste management	142, 61.7%	57, 24.8%	19, 8.3%	12, 5.2%

Note: Frequencies and percentages are based on a total sample size of N = 230.

3.4 Hypothesis 1: Effectiveness of Waste Management

H_0: Waste management in Ijebu-Ode Township is not effective.

H_1: Waste management in Ijebu-Ode Township is effective.

Chi-Square Analysis:

Item	SA	A	SD	D
2	177	44	3	6
7	156	43	17	14
8	132	73	17	8
9	117	66	25	22
13	127	59	18	26

	A		B		C		D
Item	$(O-E)^2$	$\frac{(O-E)^2}{E}$	$(O-E)^2$	$\frac{(O-E)^2}{E}$	$(O-E)^2$	$\frac{(O-E)^2}{E}$	$(O-E)^2$	$\frac{(O-E)^2}{E}$
2	876.16	6.97	25	0.42	179.56	7.94	449.44	19.7
7	924.16	7.35	256	4.33	31.36	1.38	77.44	3.39
8	40.96	0.32	196	3.32	31.36	1.38	219.04	9.60
9	73.96	0.58	49	0.83	5.76	0.25	0.64	0.02
13	1.96	0.01	0	0	21.16	0.95	10.24	0.44
Total		15.23		8.9		11.9		33.15

15.23+8.9+11.9+33.15

X^2 cal= 69.18

Degree of freedom = (c-1) (r-1)

Where c = Numbers of columns

r = Numbers of rows

Df = (5-1) (4-1)

= 4x3

Df = 12

At 0.05 x level of significance, the table value = 21.026

Decision Rule

Since X^2 cal (69.18) ≥ X^2 tab (21.026), H_0 is thus rejected while H_1 is accepted.

Decision: Reject H_o, accept H_1. Waste management in Ijebu-Ode Township is effective

In assessing the level of knowledge and effectiveness of waste management in Ijebu-Ode Township, the respondents questions were asked such as, is environmental awareness an essential component of effective waste management. The respondents were also asked if refuse skips are seen with refuse overflow in strategic locations because refuse collectors do not empty them regularly.

Table 4 dealt with respondents' knowledge and effectiveness of waste management in Ijebu-Ode Township. Based on the study analysis, which shows that X_2 calculated value of 69.18 is higher than the critical value of 21.026. For this reason, the null hypothesis (H_0) is rejected while the alternative hypothesis (H_1) which states that there is effective waste management in Ijebu-Ode Township is therefore accepted. This therefore implies that, there is effective waste management in Ijebu-Ode Township. The study results buttressed the fact that the respondents had substantial knowledge and effectiveness of waste management in Ijebu-Ode Township.

Hypothesis 2: Relationship Between Personnel Availability and Waste Management Effectiveness

H_o: No significant relationship exists between availability of personnel and effectiveness of waste management.

H_1: A significant relationship exists.

Chi-Square Analysis:

Item	SA	A	SD	D
4	137	52	17	24
5	93	42	27	68
10	97	42	56	35
11	178	26	9	17
12	157	71	0	2

A		B		C		D		
Item	$(O-E)^2$	$\frac{(O-E)^2}{E}$	$(O-E)^2$	$\frac{(O-E)^2}{E}$	$(O-E)^2$	$\frac{(O-E)^2}{E}$	$(O-E)^2$	$\frac{(O-E)^2}{E}$
4	21.16	0.15	29.16	0.62	23.04	1.05	27.04	0.92
5	1,552.36	11.7	21.16	0.45	27.04	1.24	1,505.44	51.5
10	1,253.16	9.46	21.16	0.45	1,169.64	53.6	33.64	1.15
11	2,079.36	15.7	424.36	9.10	1,638.4	75.1	148.84	5.09
12	605.16	4.57	595.36	12.77	475.24	21.8	739.84	25.33
Total		41.58		23.39		152.79		83.99

41.58+23.39+152.79+83.99

X^2 cal= 301.75

Degree of freedom = (c-1) (r-1)

Where c = Numbers of columns

r = Numbers of rows

Df = (5-1) (4-1)

= 4x3

Df = 12

At 0.05 x level of significance, the table value = 21.026

Decision Rule

Since X^2 cal (301.75) ≥ X^2 tab (21.026), H_0 is thus rejected while H_1 is accepted.

In evaluating the significant relationship between effective waste management and inadequate waste management personnel in Ijebu-Ode Township, the respondents were asked if staff strength of environmental sanitation workers in Ijebu-Ode Township is inadequate for proper waste management. Equally, the respondents were also asked if a single waste management organization can oversee the operational service of waste management in Ijebu-Ode Township. Attitudes were also measured by asking if residents of Ijebu-Ode Township dump refuse in the surrounding areas when the skips in their neighborhood are full to the brim.

Table 5 dealt with respondents' significant relationship between effective waste management and inadequate waste management personnel in Ijebu-Ode Township. Based on the study analysis, which shows that X_2 calculated value of 301.75 is higher than the critical value of 21.026. For this reason, the null hypothesis (H_0) is rejected while the alternative hypothesis (H_1) which states that there is significant

relationship between effective waste management and inadequate waste management personnel in Ijebu-Ode Township is therefore accepted.

Decision: Reject H_0, accept H_1. Personnel availability significantly influences waste management effectiveness.

Hypothesis 3: Impact of Monthly Environmental Sanitation Exercises

H_0: Monthly sanitation exercises have no significant impact.

H_1: Monthly sanitation exercises have significant impact.

Chi-Square Analysis:

Item	SA	A	SD	D
1	177	44	3	6
3	122	28	54	26
6	113	69	23	25
14	142	57	19	12

		A		B		C		D
Item	$(O-E)^2$	$\frac{(O-E)^2}{E}$	$(O-E)^2$	$\frac{(O-E)^2}{E}$	$(O-E)^2$	$\frac{(O-E)^2}{E}$	$(O-E)^2$	$\frac{(O-E)^2}{E}$
1	1,482.25	10.70	30.25	0.61	473.06	19.11	126.56	7.33
3	272.25	1.96	462.25	9.33	855.56	34.56	76.56	4.43
6	650.25	4.69	380.25	7.68	3.06	0.12	60.06	3.48
14	12.25	0.08	56.25	1.13	33.06	1.33	27.56	1.59
Total		17.43		18.75		55.12		16.83

17.43+18.75+55.12+16.83

X^2 cal= 108.13

Degree of freedom = (c-1) (r-1)

Where c = Numbers of columns

r = Numbers of rows

Df = (4-1) (4-1)

= 3x3

Df = 9

At 0.05 x level of significance, the table value = 16.919

Decision Rule

Since X^2 cal (108.13) ≥ X^2 tab (16.919), H_0 is thus rejected while H_1 is accepted.

For impact of Monthly environmental sanitation exercise on sanitation situation in Ijebu-Ode Township, by the respondents, they were asked questions such as; if environmental awareness is an essential component of effective waste management. They were also asked if the Monthly environmental sanitation exercise has positively impacted on the level of environmental quality in Ijebu-Ode Town. Inclusively, the respondents were asked if influx of people into Ijebu-Ode Town has tremendously contributed to massive waste generation. Finally, they were asked if there is a need to cooperate with environmental health workers in order to achieve proper waste management.

From Table 6 above shows significant impact of Monthly environmental sanitation exercise on sanitation situation in Ijebu-Ode Township. According to the study which shows that X_2 calculated value of 108.13 is higher than the critical value of 16.919. For this reason, the null hypothesis (H_0) is rejected while the alternative hypothesis (H_1) which states that there is significant impact of Monthly environmental sanitation exercise on sanitation situation in Ijebu-Ode Township is therefore accepted.

Decision: Reject H_0, accept H_1. Monthly sanitation exercises significantly improve sanitation.

Hypothesis 4: Contributions of Waste Managers and Provision of Resources

H_0: The contributions of waste managers and the provision of resources do not significantly influence waste disposal and management.
H_1: The contributions of waste managers and the provision of resources significantly influence waste disposal and management.

Chi-Square Analysis:

Item	SA	A	SD	D
5	93	42	27	68
12	157	71	0	2
14	142	57	19	12

	A	B	C	D
Item	$(O–E)^2/E$ (SA)	$(O–E)^2/E$ (A)	$(O–E)^2/E$ (SD)	$(O–E)^2/E$ (D)
5	10.88	3.80	8.95	58.54
12	5.29	3.63	15.33	23.48
14	0.98	0.002	0.88	8.61
Total	17.15	7.43	25.16	90.63

= 17.15 + 7.43 + 25.16 + 90.63 \approx 140.37]

X^2 cal= 140.37

Degree of freedom = (c-1) (r-1)

Where c = Numbers of columns

r = Numbers of rows

Df = (3-1) (4-1)

= 2x3

Df = 6

At 0.05 x level of significance, the table value = 12.592

Decision Rule: Reject H_0, accept H_1. The contributions of waste managers and the provision of resources **significantly influence waste disposal and management in Ijebu-Ode Township.**

The analysis indicates that respondents recognize the important role of waste managers and the provision of necessary resources in ensuring proper waste management. Items such as whether a single waste management organization can oversee operations, whether waste dump sites are breeding grounds for disease vectors, and the cooperation of residents with environmental health workers, all contribute significantly to the effectiveness of waste disposal and management. This confirms that both managerial efforts and resource allocation are key determinants of effective waste management in Ijebu-Ode Township.

4. CONCLUSION

The study has systematically examined waste management practices and challenges in Ijebu-Ode Township, revealing several critical insights. From the 250 administered questionnaires, 230 valid responses were analyzed, indicating a high response accuracy of 92%, which reflects the reliability of the collected data. Demographically, the study showed that waste disposal activities are primarily undertaken by middle-aged and older residents, with a diverse educational and occupational profile, ranging from individuals with no formal education to those with postgraduate qualifications, and from students to self-employed and civil servants. The analysis of common waste disposal and management problems highlighted significant gaps in environmental awareness, infrastructure, and personnel availability. A substantial majority of respondents (77% strongly agreed, 19.1% agreed) recognized environmental awareness as a key component of effective waste management, yet 41.7% and 23.5% indicated that regular environmental education is lacking. Issues such as inadequate refuse containers, overflowing skips, and irregular waste collection were also prominent, confirming that operational inefficiencies continue to hinder optimal waste management.

The hypotheses tested in the study provide further clarity on the dynamics of waste management in the township. First, the effectiveness of waste management was confirmed ($\chi^2_cal = 69.18 > \chi^2_tab = 21.026$), indicating that despite the challenges, existing waste management initiatives have achieved measurable outcomes. Second, personnel availability was shown to significantly influence waste management effectiveness ($\chi^2_cal = 301.75 > \chi^2_tab = 21.026$), underscoring the critical role of adequate staffing in operational efficiency. Third, the impact of Monthly Environmental Sanitation Exercises was significant ($\chi^2_cal = 108.13 > \chi^2_tab = 16.919$), demonstrating that these exercises contribute meaningfully to environmental quality and public health. Finally, the contributions of waste managers and the provision of resources were found to significantly influence waste disposal and management ($\chi^2_cal = 140.37 > \chi^2_tab = 12.592$), highlighting that managerial leadership and resource allocation are central to effective waste management. Generally, the findings indicate that while waste management in Ijebu-Ode Township is effective, it is highly dependent on adequate personnel, structured sanitation exercises, community cooperation, and the strategic contributions of waste managers supported by sufficient resources. To enhance sustainability, there is a need for continued environmental education, improved waste management infrastructure, and the reinforcement of staff strength to cope with increasing waste generation driven by population influx. These results provide a robust basis for policy interventions aimed at optimizing waste management practices and promoting environmental health in Ijebu-Ode Township.

5. RECOMMENDATION

Findings from this study, these recommendations will help to eradicate the waste disposal and management problems faced by the people of Ijebu-Ode inhabitants.

1. There is a need for proper orientation of the entire citizenry in Ijebu-Ode Township on the extremely serious consequence of improper waste management.

2. There is urgent need to increase the numerical strength of public health officer in order to monitor waste disposal and attainment of clean environment.
3. The government should provide adequate fund and necessary equipment or machineries for effective and efficient waste disposal management.
4. The waste generated by Ijebu-Ode residents should be adequate managed and possibly turn same into manure for agricultural purposes.
5. The newly re-introduced Monthly environmental sanitation exercise in Ogun State is a welcome development, but efforts should be made for strict compliance by Ijebu-Ode residents.

It is hoped that these recommendations, if taken by the government, at all levels and the inhabitants themselves, would help address the waste disposal and management problems in Ijebu - Ode Township and the nation at large.

Declarations

Ethical statement

The study was conducted in accordance with applicable ethical standards and approved by the appropriate institutional review board/ethics committee where required. Informed consent was obtained from all participants, and all data have been handled in compliance with relevant privacy and confidentiality regulations. The authors declare no conflicts of interest.

Competing Interests

The authors declare no conflicts of interest.

Consent to participate Declaration

All participants provided informed consent prior to their involvement.

Consent to publish Declaration: Not Applicable

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Data Availability

The data generated in the present study are included in the article and available from the corresponding author on request.

Ethical Issues

Authors have declared no ethical issues in the manuscript.

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