



Community Development Groups and Waste Management Practices in selected Communities in Obio/Akpor LGA, Rivers State, Nigeria

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Abstract

The study examined community development groups and waste management practices in selected communities in Obio/Akpor LGA of Rivers state. The study employed primary data collection to administer copies of the questionnaire to residents in Rumuolumeni, Rumuekini, Rumuosi and Ogbogoro communities under Obio/Akpor LGA. Random sampling technique was employed for data collection. A total of 400 copies of the questionnaire were administered in the study area. The descriptive statistics in form of Tables and inferential statistics using ANOVA analysis were employed for data presentation and analysis for the study. Findings revealed that the level of involvement of community development groups as regards waste management practices in respective communities is very low (68.0%); while some residents rated it low (13.1%) and others no involvement (18.9%). The study discovered that only 3.1% of the total population practices waste separation while others (96.6%) usually lump all wastes together. The prominent waste collection points in the study area are the open dumpsites which are found along major roads in the study area. Findings revealed that only 3.1% of respondents practices wastes separation while 96.9% do not separate their wastes. Poorly organized waste collection points were observed in the study area. The level of involvement of community development groups which was rated very poor among residents are similar in the study area ($F=0.661$; $p<0.05$). The study therefore recommends amongst others that weak strategic planning and lack of participation in waste management by community development groups should be treated urgently for advancement in effective waste management in Obio/Akpor LGA.

Keywords: Community development groups, Wastes management, Practices, Dumpsites, Obio/Akpor.

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I. Introduction

Wastes according to the United States Environmental Protection Agency (USEPA) (2021) are produced by human activities that are in a solid or semisolid form and are thrown away as useless products. Adejumo and Adebisi (2020) submitted that solid wastes are a broad group of wastes produced as a result of various activities such as agricultural activities, landscaping activities and other processes including domestic and commercial processes. It was further argued that solid wastes are distinctly different from waste water and gaseous waste emissions (Adejumo and Adebisi, 2020). USEPA (2021) concluded that unlike other wastes, solid wastes do not disappear easily. They argued that, where they are thrown today is where they will still be found in future. Thus, its management should be highly coordinated and sustained in order to prevent its associated health and environmental problems (Hussein and Mona, 2018).

Therefore, the business of keeping our environment free from the contaminating effects of waste materials is generally termed waste management. Gbekor (2003) for instance, has referred to waste management as involving “the collection, transport, treatment and disposal of waste including after care of disposal sites”. Similarly, Gilpin (1996) has defined waste management as “purposeful, systematic control of the generation, storage, collection, transportation, separation, processing, recycling, recovery and disposal of solid waste in a sanitary, aesthetically acceptable and economical manner”. Abagale *et al.*, (2012) focused on municipal solid waste management which they define as “the collection, transfer, treatment, recycling, resource recovery and

disposal of solid waste in urban areas". Oyelola *et al.*, (2011) regards the business of waste management as a professional practice which goes beyond the physical aspects of handling waste. It also "involves preparing policies, determining the environmental standards, fixing emission rates, enforcing regulations, monitoring air, water and soil quality and offering advice to government, industry and land developers, planners and the public". Ochere *et al.*, (2017) reiterated that the priority of a waste management system must always be the provision of a cleansing service which helps to maintain the health and safety of citizens and their environment. Ikebude (2017) termed solid waste management as a function of combination of various activities such as collection, transportation and disposal of solid waste. It also includes processing and treatment of the solid waste before disposing

Major cities in Nigeria are currently facing serious environmental problem arising from poor solid waste management (Ajadi and Tunde, 2010; Ikebude 2017) and the rate of solid waste generation in Nigeria has increased with rapid urbanization (Daramola, 2010; Tamunobereton-ari *et al.*, 2012; Alagbe *et al.*, 2020). Similarly, among communities in Nigerian cities, waste generation and disposal and practices have been poorly regulated overtime from the point of collection, transportation and the disposal of waste; coupled with the fact that some waste disposal methods and practices are by far poorly coordinated and ineffective. Thus, established community development groups can help improve the overall waste management system of communities, especially the waste collection process from sources and should be able to motivate the residents to store the waste properly and to keep clean their premises. According to the World Bank (2021) the bottom-up approach is a community based strategy, where the communities are the drivers, and encourages joint decision making between communities and sectoral agencies for a common goal and interests. Regrettably, this is not so in most communities in Nigeria, especially in Rivers state. It has become a norm that a lot of wastes from time to time are being generated without proper coordination and management in communities even in the face of active community development groups.

This is a serious issue as the problem seem to be getting worse daily amidst past studies stressing the need for sound waste management practices at community levels (Akinjare *et al.*, 2011; Tamunobereton-ari *et al.*, 2012; Ogbonna *et al.*, 2012; Mmom and Mbee, 2013; Binafeigha and Enwin, 2017). A healthy environment remains one source of wellbeing and it is the responsibility of individuals, households, communities, organizations, and government to promote healthy environment. Thus, what methods are employed for wastes management practices among residents in some selected communities in Obio/Akpor LGA? What is the status of the designated dumpsites? How involved are the community development groups in these communities toward waste management overtime? It is based on this background and research problems that the paper examined community development groups and waste management practices in selected communities in Obio/Akpor LGA of Rivers state.

II. Materials and Methods

Description of the Study Area

The selected communities in Obio/Akpor LGA are Rumuolumeni, Rumuekini, Rumuosi and Ogbogoro (Figure 1) while Figure 2 showed the map of Port Harcourt metropolis locating Obio/Akpor LGA. These communities were selected because they have active community development groups. Obio/Akpor LGA is under Rivers State and part of the Port Harcourt metropolis which is located geographically within latitudes 6⁰ 58' N to 7⁰ 06' N and 4⁰ 40' E to 4⁰ 55' E (Figure 1). The study area lies in the South-south geo-political zone of Nigeria. The study area lies on the low-lying coastal plain with mean elevation of about 60 feet (20m). Obio/Akpor LGA is situated in the sub equatorial region. It has tropical climate with a mean yearly temperature of 30⁰ C, a relative humidity of 80% - 100% and a mean yearly rainfall of about 2,300mm (Adeomo, 2013). The area is consistently nourished with high rainfall and high temperature, which provide favorable condition for the growth of a varieties of tall and big trees like mahogany, Obeche Afara and abundance of oil palm trees and several other species of economically valuable trees such as Abura, raffia palm etc, shrubs, ferns, and floating grasses, also form the vegetation of the area (Obinna *et al.*, 2009). The 2006 population census for Obio/Akpor stood at 464,789 persons. The study area is not only a key administrative center but also an important commercial and educational center.

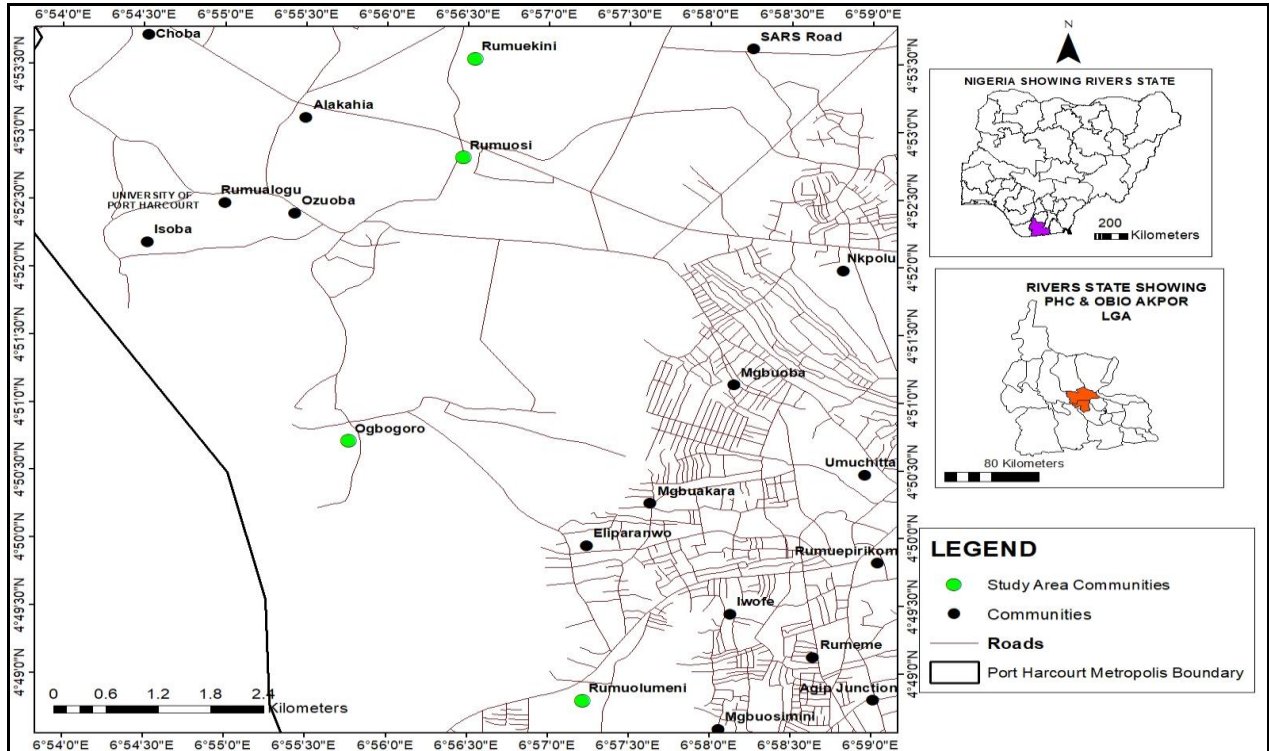


Figure 1: Study Area Communities
 Source: Adapted from Google Earth, 2021

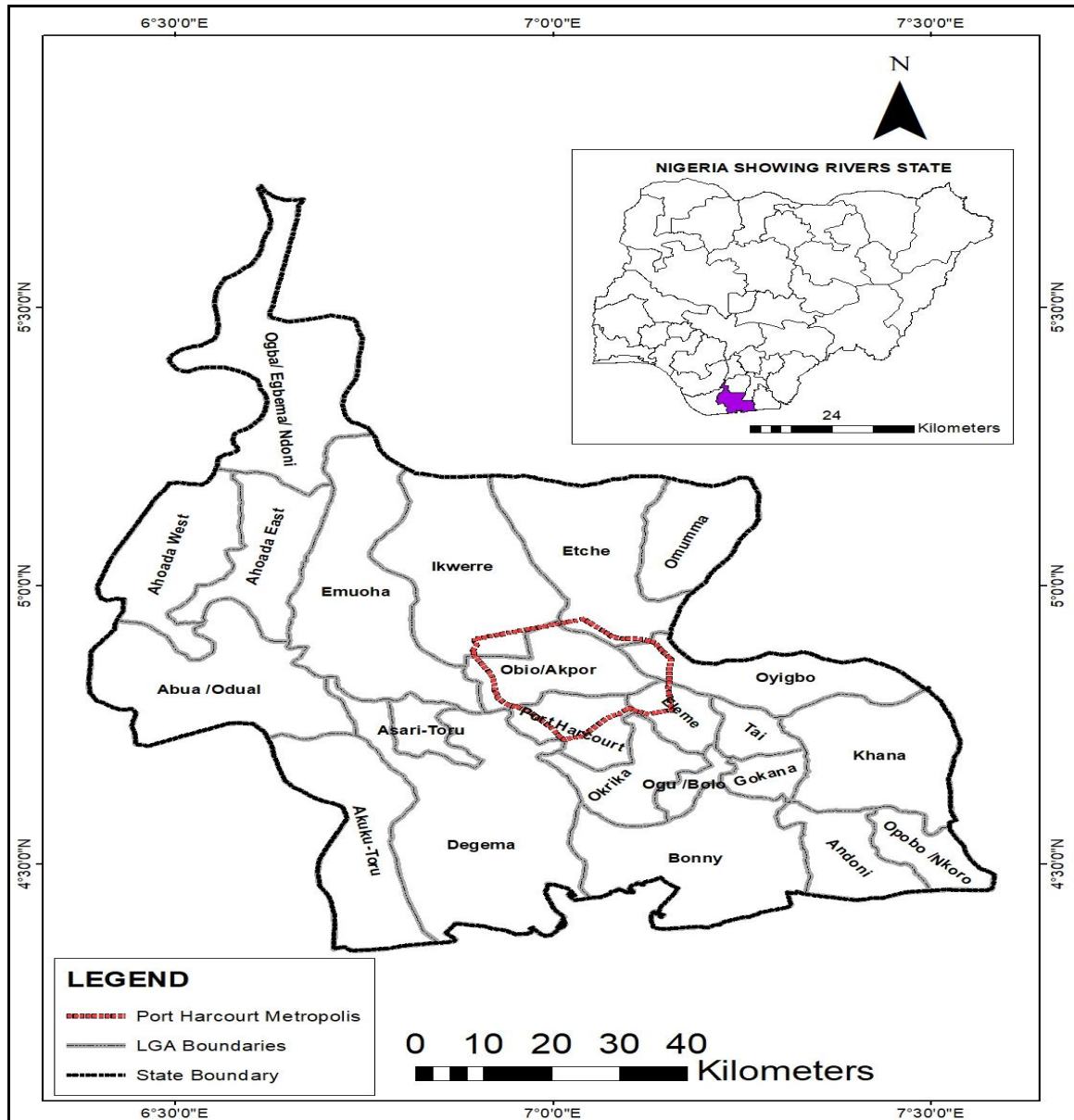


Figure 2: Port Harcourt Metropolis locating Obio/Akpor LGA
 Source: Adapted from Google Earth, 2021

Data Collection

The cross-sectional research design was adopted for the study because it attempts to collect information from respondents across the population at a specific time. The primary data was acquired from field survey whereby copies of the questionnaire were administered among residents in the study area communities (Rumuolumeni, Rumuekini, Rumuosi and Ogbogoro). The total population figure for these communities when projected to 2021 was 44,854 (Table 1). However, due to the difficulty involved in obtaining information from the total population in the study area, a sample size was determined for the study. The population of the study which was 44,854 was subjected to the Taro Yamane (1967) formula and was used to determine a sample size of 396.465 which was rounded up to 400 (Table 2). The proportional sample sizes for each community were determined from the projected population figure (Table 2). The total copies of questionnaire administered were 400 whereby, a total copy of 381 was retrieved for the study because 10 copies were not returned and 9 copies were not properly filled (Table 2).

Table 1: Details of Population for the Study area communities

Study area communities	Communities that make up Rumuolumeni	*2006	2021**
Rumuolumeni	Mgbu-Odonia	1206	1702
	Mgbuosimini	5303	7474
	Nkpor	3006	5387
	Total	9822	14563
Rumuekini		6759	9338
Rumuosi		3114	3748
Ogbogoro		13149	17205
	Overall Total	42359	44854

*National Population Commission (2006); ** Projected Population Figures

Table 2: Proportional sample sizes

Study Communities	Population (2021)	Proportion Sample sizes	Total copies of Questionnaire administered	Total number of copies returned
Rumuolumeni	14563	130	130	124
Rumuekini	9338	83	83	77
Rumuosi	3748	34	34	32
Ogbogoro	17205	153	153	148
Total	44,854	400	400	381

Sampling Procedure

The random sampling technique was utilized for selecting respondents and this ensured that equal chances were given to all residents to be selected as respondents for the study. The respondents can be either a male or a female.

Data Analysis

The descriptive statistics were employed for data presentation for the study. The data obtained for the study were presented in Tables and charts. The ANOVA analysis was used to examine whether there is a significant difference in the level of involvement of community development groups among selected communities in the study area. The obtained copies of the questionnaire retrieved were coded in Excel worksheet 2010 and analysed using SPSS version 24.0.

III. Results of the Analysis

Socio-economic Characteristics of Sampled Respondents

The socio-economic characteristics of sampled respondents are displayed on Table 3. The distribution revealed that 55.9% respondents were male while the remaining 44.1% were female. Therefore, most respondents for the study were males. The age status of sampled respondents for the study showed that 5.2% of sampled respondents falls between 18-25 years of age, 8.4% respondents were between 26-35 years old, 38.6% falls between the age bracket of between 36 and 45 years, 33.9% belong to the age group between 46 and 55 years, while the remaining 13.9% of respondents were 56 years and above. The information for the level of education showed that 17.1% respondents had primary education, 31.0% respondents had secondary education, while the remaining 52.00% respondents have tertiary education. The occupational status of sampled respondents revealed that 5.8% of sampled respondents were traders; 50.9% of respondents were civil servants; 4.5% respondents are businessmen/self employed; 6.8% of respondents are public servants like contractors/estate managers, surveyors; 20.2% of the respondents are unemployed; while the remaining group of respondents is into other forms of business-like commercial cab/taxi drivers. The survey revealed that most of the respondents for the study were government workers. The information for the average monthly income of respondents showed that 2.9% of respondents earns at least ₦30,000; 4.7% respondents earns between ₦31,000 to ₦50,000; 5.8% respondents earns between ₦51,000 to ₦70,000; 34.6% respondents claimed they earn between ₦71,000 to ₦90,000; while the remaining 52.0% of sampled respondents earn from ₦91,000 and above. The information for the living status of respondents revealed that 18.1% are landlords while the remaining 81.9% were tenants.

Table 3: Socio-economic Characteristics of Sampled Respondents

Characteristics	Response Frequency	Percentage (%)
Sex		
Male	213	55.9
Female	168	44.1
Age (years)		
18-25	20	5.2
26-35	32	8.4
36-45	147	38.6
46-55	129	33.9
56 years and above	53	13.9
Level of Education		
Primary	65	17.0
Secondary	118	31.0
Tertiary	198	52.0
Occupation		
Trading	22	5.8
Civil Servant	194	50.9
Business/Self employed	17	4.5
Public Servant	26	6.8
Unemployed	77	20.2
Others	45	11.8
Average Monthly Income		
₦0 - ₦30,000	11	2.9
₦31,000 - ₦50,000	18	4.7
₦51,000 - ₦70,000	22	5.8
₦71,000 - ₦90,000	132	34.6
₦91,000 and above	198	52.0
Living Status		
Landlord	69	18.1
Tenant	312	81.9

Waste Management Practices in the Study Area

Household Waste management

The information displayed on Table 4 showed the waste management methods at household level in the study area. It was revealed that 24.9% of respondents indicated the use of big black polythene bags; 50.9% of respondents indicated the use of drums and containers; 7.1% of respondents use containers covered in polythene bags; 11.3% of respondents indicated use of any polythene bag they could obtain; while the remaining 5.8% indicated burning as a means of managing their household generated wastes. Thus, more residents for the study practiced the use of drums and containers for managing their wastes at household levels

Table 4: How do you manage your household/workplace wastes?

Sampled Communities		Methods					Total
		Big black polythene bags only	Drums/Containers only	Drums/Containers covered in black polythene bags	Any polythene bags	Burning	
Rumuolumeni		31 8.1%	62 16.3%	10 2.6%	13 3.4%	8 2.1%	124 32.5%
Rumuekini		19 5.0%	42 11.0%	7 1.8%	5 1.3%	4 1.0%	77 20.2%
Rumuosi		7 1.8%	21 5.5%	1 0.3%	2 0.5%	1 0.3%	32 8.4%
Ogbogoro		38 10.0%	69 18.1%	9 2.4%	23 6.0%	9 2.4%	148 38.8%
Total		95 24.9%	194 50.9%	27 7.1%	43 11.3%	22 5.8%	381 100.0%

Waste Evacuation Responsibility

The question of who is responsible for final disposal of wastes generated at household level was asked and the responses received are displayed on Table 5. The results showed that all sampled respondents (100.0%) indicated individual responsibility. This means that waste evacuation at residential/street level is majorly done by individuals (not the community or government) in the study area. However, the major dumpsites for all waste generated in each community are being managed by the government. The issue here is that waste are no longer collected or evacuated from the streets but only along major roads linking to the street roads in the study area.

Table 5: Waste evacuation responsibility

Sampled Communities		Responses	
		Individual	Total
Sampled Communities	Rumuolumeni	124	124
		32.5%	32.5%
	Rumuekini	77	77
		20.2%	20.2%
	Rumuosi	32	32
		8.4%	8.4%
	Ogbogoro	148	148
		38.8%	38.8%
Total		381	381
		100.0%	100.0%

Are wastes Separation Practices Conducted?

Residents were asked if they practice waste separation either at household level or at community levels. The distribution on Table 6 revealed that only 3.1% of sampled respondents indicated that they normally separate their waste; while the remaining 96.9% of respondents do not separate their waste. Waste separations help reduce the impact of waste on landfills and on the environment. Since most wastes generated are not separated, then it means no waste will be separated at the end.

Table 6: Do you practice Waste Separation?

Sampled Communities		Responses		Total
		Yes	No	
Sampled Communities	Rumuolumeni	7	117	124
		1.8%	30.7%	32.5%
	Rumuekini	3	74	77
		0.8%	19.4%	20.2%
	Rumuosi	0	32	32
		0.0%	8.4%	8.4%
	Ogbogoro	2	146	148
		0.5%	38.3%	38.8%
Total		12	369	381
		3.1%	96.9%	100.0%

Characteristics of Waste Collection Points (Dumpsites)

The characteristic of waste collection points in the study area is displayed on Table 7. The study revealed that only open dumpsite is practiced in the study area as all respondents (100.0%) indicated it as the only type of waste collection point. The open waste dumpsite has several implications on land – which ranges from the spread of foul odour, to water contamination. The study observed that the major type of open dumpsite practiced in the study area is dumping of refuse along major roads. The road divide (concrete pavements) at the centre of the road are locations for dumping of wastes generated from the communities. This is a sign of deficient and organized outline for waste disposals and management in the study area.

Table 7: Characteristics of major waste collection points

Sampled Communities		Type	Total
		Open Dumpsite	
Sampled Communities	Rumuolumeni	124	124
		32.5%	32.5%
	Rumuekini	77	77
		20.2%	20.2%
	Rumuosi	32	32
		8.4%	8.4%
	Ogbogoro	148	148
		38.8%	38.8%
Total		381	381
		100.0%	100.0%

Status of Waste Dumpsites in the study area

The residents indicated that the dumpsites in their communities are in a very poor state, as majority of sampled respondents (88.7%) indicated it to be very poor; while the remaining 11.3% indicated a poor status. Thus, designated dumpsites on waste management in the study area have been very poor overtime. The issue of very poor status of dumpsites has a lot to do with waste management; however, centre of the road or poorly facilitated locations as major dumpsites will not be active and good enough to cope with the ever-increasing challenges of waste generation in Obio/Akpor LGA.

Table 8: Ratings of Status of Wastes Dumpsites

Sampled Communities		Responses		
		Very poor	Poor	Total
Sampled Communities	Rumuolumeni	106 27.8%	18 4.7%	124 32.5%
	Rumuekini	71 18.6%	6 1.6%	77 20.2%
	Rumuosi	28 7.3%	4 1.0%	32 8.4%
	Ogbogoro	133 34.9%	15 3.9%	148 38.8%
Total	338 88.7%	43 11.3%	381 100.0%	

Level of Involvement of Community Development Groups in Waste Management

The information displayed on Figure 3 displays the level of involvement of community development groups/members on waste management in the study area. Majority of sampled respondents (259) representing (68.0%) indicated it to be very low; a total number of (50) respondents representing (13.1%) indicated the level of community development groups to be low; while the remaining (72) respondents representing (18.9%) declared that they have no involvement. Thus, the level of involvement of community development groups as regards waste management practices in the study area is very low.

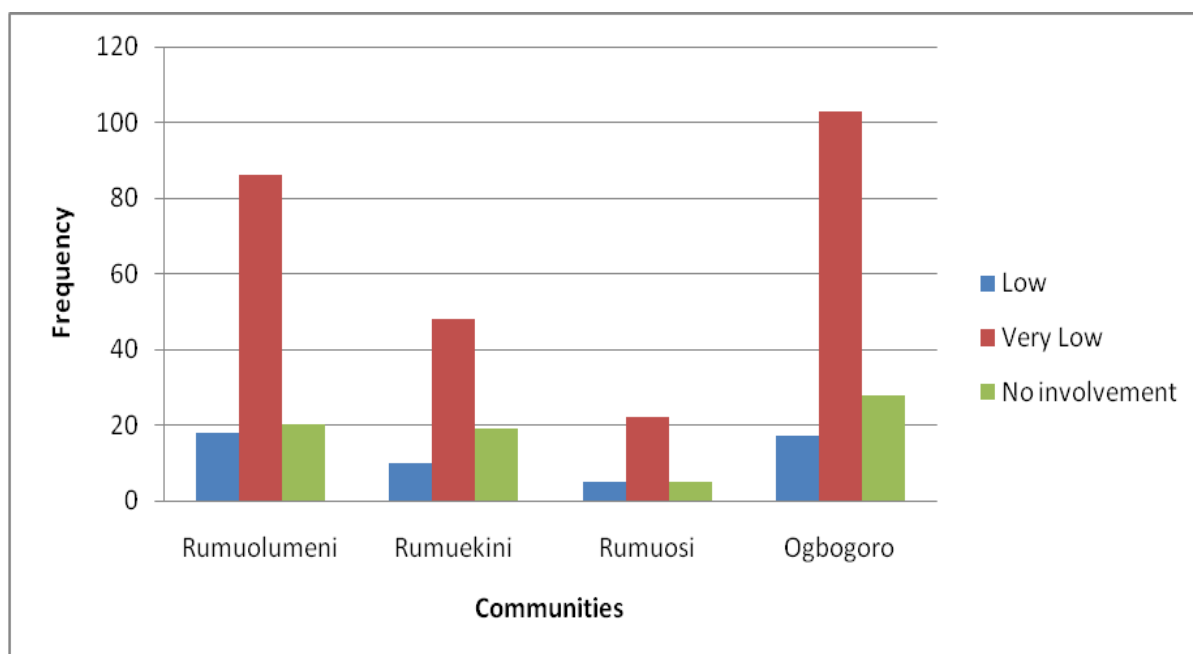


Figure 3: Level of involvement of Community development groups towards wastes management

Are there differences in the Level of Involvement of Community development groups among Communities?

The results displayed on Table 9 is for the descriptive statistics of the analysis while the information on Table 10 revealed an F ratio of 0.661 and a level of significance of 0.577 which was higher than p-value of 0.05(95% probability value). Thus, the level of involvement of community development groups on waste management practices does not differ significantly among communities in the study area.

Table 9: Descriptive Statistics

Communities	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Rumuolumeni	124	5.02	.556	.050	4.92	5.11	4	6
Rumuekini	77	5.12	.606	.069	4.98	5.25	4	6
Rumuosi	32	5.00	.568	.100	4.80	5.20	4	6
Ogbogoro	148	5.07	.548	.045	4.99	5.16	4	6
Total	381	5.06	.564	.029	5.00	5.11	4	6

Table 10: ANOVA Analysis

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.631	3	.210	.661	.577
Within Groups	120.098	377	.319		
Total	120.730	380			

IV. Discussion, Conclusion and Recommendations

The study discovered that community development committee groups in the study area have not been actively involved in waste management in their respective communities. Their impacts have not been felt across sampled communities in the study area. These communities (Rumuolumeni, Rumuekini, Rumuosi and Ogbogoro) have active community development committee groups that can be instrumental in the effective management of wastes in the study area if they are adequately sensitized and well equipped. The challenge observed in the study areas regards this finding is the issue of weak strategic planning, poor funding and poorly facilitated waste collection mediums as most waste collection sites are open waste dumpsites in the study area. As reported by Tamunobereton *et al.*, (2012) that major storage facilities for solid wastes are sub-standard. Similarly, Unaeze *et al.*, (2019) also reported recently that the fact that most major dumpsites in Port Harcourt are open dumpsites makes its management poor and ineffective. The study agrees with Demirbas (2011) that wastes when not properly managed, that is, when it is lacking sound policies, will promote uncoordinated methods imminent to compound its management problems. The established community development groups in sampled communities have not effectively contributed to waste management in the study area. Community leaders and groups should adopt the World Bank (2021) bottom-up approach to remedy the situation as regards effective and efficient waste management practices in the study area. This bottom-up approach stressed the need for a community-based strategy that becomes drivers, and encourages joint decision making between communities and sectoral agencies for a common goal which in this case should be targeted towards effective waste management in Obio/Akpor LGA. Thus, there is need to introduce sufficient infrastructures to handle the challenges as regards poor waste collection sites. The study recommends that pro-active measures need to be established in these areas if any meaningful improvement will be felt as regards the problems identified in the study. The study therefore made these observations and recommends strongly that these issues be resolved urgently for advancement: weak strategic planning; uncoordinated waste management practices; poor communication between municipality and residents; and the lack of participation in waste management by community development groups.

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