Assessment of Waste Management Practices of Rural Dwellers in Kwara State, Nigeria

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Abstract

Waste management safeguards humans and the environment from unhealthy and toxic substances. This study therefore assessed waste management practices among rural dwellers in Asa Local Government Area of Kwara State, Nigeria. Specifically, it investigated the methods of handling wastes, examined their perception of the importance of waste management, and determined the factors hindering proper waste disposal. Purposive sampling was used to select the study area, primary data was collected through field survey which relied on interview schedule and questionnaire; and 93 respondents were selected using stratified random sampling method. Percentage, mean score and Pearson product moment correlation were used to analyse the data.

The study found that pit burning (MS = 3.95) and communal disposal site (MS = 3.56) were commonly used for waste disposal. Majority (96.8%) strongly agreed that perceived proper waste management is needed for clean environment and preventive of diseases. Institutional factors (lack of official structures, adequate sanctions and non-availability of facilities) (MS = 3.87), poor funding (MS = 3.67), illiteracy (MS = 3.44) and poor strategies for raising environmental awareness (MS = 3.18) were severe factors inhibiting proper waste management. Hence, there should be adequate waste disposal facilities and raising awareness of clean environment to boost enlightenment on the importance of waste management.

Keywords: Waste Management Practices, Enlightenment, Institutional Factors, Open Burning, Composting

Introduction

The study was conducted in Kwara State, Nigeria which was created in 1967 as one of the twelve states carved out of the hitherto four regions. The main source of livelihood of the people is agriculture even though they engage in other economic activities such as weaving, blacksmithing, trading in textiles and leather materials. The State shares an international boundary with the Republic of Benin to the west and borders internally with Osun, Oyo, Ondo, Kogi, Niger, and Ekiti States.

The environment is being faced with a myriad of problems which not only stem from ecological perspectives (Senekane et al., 2021; Mihai, 2018), but natural resources have also played a significant role in rural development especially in areas of social, political and economic transformation (Apostol & Mihai, 2012). Hence, the environment has consistently been overburdened with the aftermath of the excesses of humans in their struggle for survival. Evidence has shown that dump sites usually found on the outskirts of urban areas can cause water pollution in addition to harbouring contaminants and disease transmitters such as flies, mosquitoes, and rodents which may ultimately breed diseases like cholera, malaria, fever and typhoid that affect human health (Salami et al., 2011; Cressey, 2016; Viljoen et al., 2021).

Further to this, open burning at dumpsters can cause air pollution and may ultimately result in excessive release of carbon monoxide and greenhouse gases that can hasten the earth's warming, injurious to humans, and worsen the depletion of the ozone layer (Amuda et al., 2014). Meanwhile, it is pertinent to note that the term waste refers to any garbage, refuse or sludge arising from waste and water treatment plans as well as air

pollution control facilities (Abul, 2010; Ogundele et al., 2018) Such wastes can include solid, liquid or gaseous materials resulting from industrial, commercial and agricultural activities. In addition, Olalekan et al. (2019) and Viljoen et al. (2021) define waste as anything that the owner does not want anymore and wants to discard or dispose of, whether it can be re-used, recycled, recovered, or not. The protection of the environment and human health from the potential hazard arising from inappropriate waste disposal has become common place in environmental discourse (Abul, 2010).

The existence of humans makes it unavoidable to generate waste whether it is solid, liquid or gas. The processes involved in solid waste management may include waste separation, collection, transportation, treatment, and disposal; and the inability to sustainably maintain these stages will mean an improper waste management (Awopetu et al., 2014). The improper management of such wastes poses health hazards to residents and can result in serious health complications such as bronchitis and cancer (Ogwu, 2018). Improper waste management can also upset the ecological balance of nature as a result of high level of industrial discharge (Amuda et al., 2014; Ogwu, 2018; Ibikunle et al., 2019). Moreover, when wastes are improperly disposed by throwing them into water bodies, the microbial degradation of such wastes leads to oxygen depletion and this translates into depletion of fishes that require oxygen for survival (Ogwu, 2018; Ogundele et al., 2018). Hence, there is a real need to properly manage solid wastes by adopting proper management practices in order to minimize the attendant consequences. However, this study presupposes that all wastes needed to be properly managed and hence did not narrow the scope towards a particular type. Therefore, waste in this article refers to solid, liquid, and gaseous wastes.

In as much as there are private bodies that are involved in waste management in Nigeria, government remains a major player in waste collection, transportation and disposal (Ogwu, 2018). It is now a common site in both rural and urban centres in Nigeria for people to dump waste into drainages to the extent that roads are encroached into; and this practice consequently reduces the width of the roads and also gives rise to flooding (Ogundele et al., 2018). Given this background, it has become more apparent that the environment is a complex weave of physical, chemical and biotic factors that interact with one another and impact upon all living things and their surroundings. It plays a huge role in supporting life for a continued human existence and survival as well as providing the requirements for socio-economic progress (Senekane et al., 2021). It is therefore genuinely important to put in efforts at managing and administering the environment in order to ensure the continued existence of the biological diversity which includes man.

All tiers of government in Nigeria has consistently allocated huge resources to waste management through the budget of the Ministry of Environment, however, the rate of waste generation and method of disposal; especially in rural areas is consistently on the increase due to high level of involvement in agricultural production, processing and other engagements such as fishing, mining, and oil spillage (Olalekan et al., 2019). Studies have shown that Nigeria generates about 32 million tons of waste annually, out of which only 20-30% is collected and it may be fascinating to note that Lagos alone produces more than 10,000 tons of urban waste every day (Ibikunle et al., 2019; Bakare, 2021). In Ilorin the Kwara State capital, more than 900 tons of waste is being produced daily with a total of over 300,000 tons of waste annually (Ibikunle et al., 2019).

Kwara Waste and Environmental Protection Agency (KWEPA) through the Kwara State Environmental Protection Agency Law 1992 established the Local Government Committee on Environmental Protection (LGCEP) for the purpose of maintaining qualitative environment in rural communities. The law authorized the

Agency to assist in the management of solid wastes in the state. It was stated that all owners or occupiers of a tenement should have waste containers for depositing garbage in their premises and it is indeed an offence for any person to throw, deposit, or burn garbage on streets, open spaces, gutters, drains or drainage systems (Ijaiya, 2013). Despite the existing laws and regulations regarding waste disposal and management, communities in rural areas of Kwara State have continued to witness an increase in the careless disposal of household wastes on the road sides, drainages and in public places. In Asa Local Government Area (LGA), a borough in Kwara State, there are communities where locust bean (Parka Biglobosa) is being predominantly processed into soup condiment using traditional unhygienic methods (Yusuf Oluwatoyin & Rahji, 2012), the resultant waste after fermentation often releases odour which pollutes the environment. Another observed example in tne same area is a project of Nigerian stored Product Research Institute (NSPRI) where fish smoking kiln has now turned into a dump site and left unkept (Salami et al., 2011). Indiscriminate waste dump also affects quality of water and air of which the people seem not to be aware of the danger associated with it.

Literature Review

Researchers have investigated solid waste disposal practices of Nigerians residing in rural communities. The practices are: dumping in open spaces, burning, and dump sites were the common waste disposal practices among rural people of Oyo State (Friday & Iderawumi, 2017), Among residents in Ondo State, dumpsite, gutter, river channels, landfill & dunged holes were their common waste disposal practices (Femi et al., 2017). Another study showed that the larger population of peri-urban communities in Ogun State have the attitude of burning wastes, dumping wastes on road sides, disposing wastes in canals and drainages during rainfall (Oluwafemi et al., 2021). The most widely adopted method of waste disposal in towns of Delta State is open dumping, land filling, dig and bury (Efe, 2013). In the same vein, Olukanni et al. (2020) found that most of the people in local areas of Ogun State still dispose of their solid wastes at open dumps. A review of the status of waste management practices in Nigeria (Omole et al., 2016) concluded that the commonly practiced waste disposal methods around the country are burying of wastes, open-air burning, and open dumping and these were found to be ineffective and detrimental to public health and the environment. Studies have established that the overall solid waste management practices across various states in Nigeria are poor (Nwosu & Chukwueloka, 2020; Amasuomo & Baird, 2016). Indeed, the current waste management practices in the country are fast becoming a national issue and unsustainable, leading to apparent environmental risks (Noiki et al., 2021).

It has been reported that perception influences waste disposal practices (Mensah, 2021). Oyedotun et al. (2020) also observed that perception relates to the state of being aware of something through any of the senses of sight, hearing, taste, smell, and touch/feeling. Though it may be subjective, perception enables people to react to a situation or phenomenon since it influences understanding, interpretation, impression, and viewpoint regarding how individuals see things. This helps to translate people's perspective into a level of awareness, knowledge, belief, and expectations (Mensah, 2021). As further noted by Mensah (2021), efforts to address solid waste disposal challenges in developing countries have failed due to the negative perception people have regarding solid waste disposal. Some studies have examined the perception of waste disposal practices and Olukanni et al. (2020) showed that most of the residents in local areas of Ogun State, Nigeria are still with the opinion that sanitation services are too costly and should be at the prerogative and expense of the local and state governments. A study by Friday & Iderawumi (2017) found that while rural people in Oyo State were aware of

effects of improper solid waste disposal, yet they indulge in insanitary waste disposal and therefore opined that the role of government in waste disposal and management was below normal standard. Yoada et al. (2014) found that improper waste management could cause malaria and diarrhoea and that the general perception in Ghana was that children should be responsible for transporting waste from the households to dumping sites. In Northwest Nigeria, Kaoje et al. (2017) reported that both the residents and government were responsible for the state of poor sanitation. Although, the people agreed that residents should clean their surroundings; some were still of the opinion that government should take responsibility. A few of the sample of the study opined that improper waste disposal have health related problems while the majority were disturbed with the way refuse litters the state metropolis (Kaoje et al., 2017).

Many studies (as cited) have shared different perspectives of waste management issues but the underlining factor of perception which borders on rural people's rationale for the choice of waste disposal in Nigeria has not been thoroughly dealt with. It is against this background that this study seeks to assess the rural dwellers perception on the implications of unsystematic waste dump. In doing this, this study identified the socio-economic characteristics of the rural dwellers in the study area; investigated the methods used by the rural dwellers to handle their wastes; examined their understanding/awareness of the importance of waste management; and determined the factors inhibiting proper waste management. The research construct is shown in a conceptual framework as presented in Figure 1.

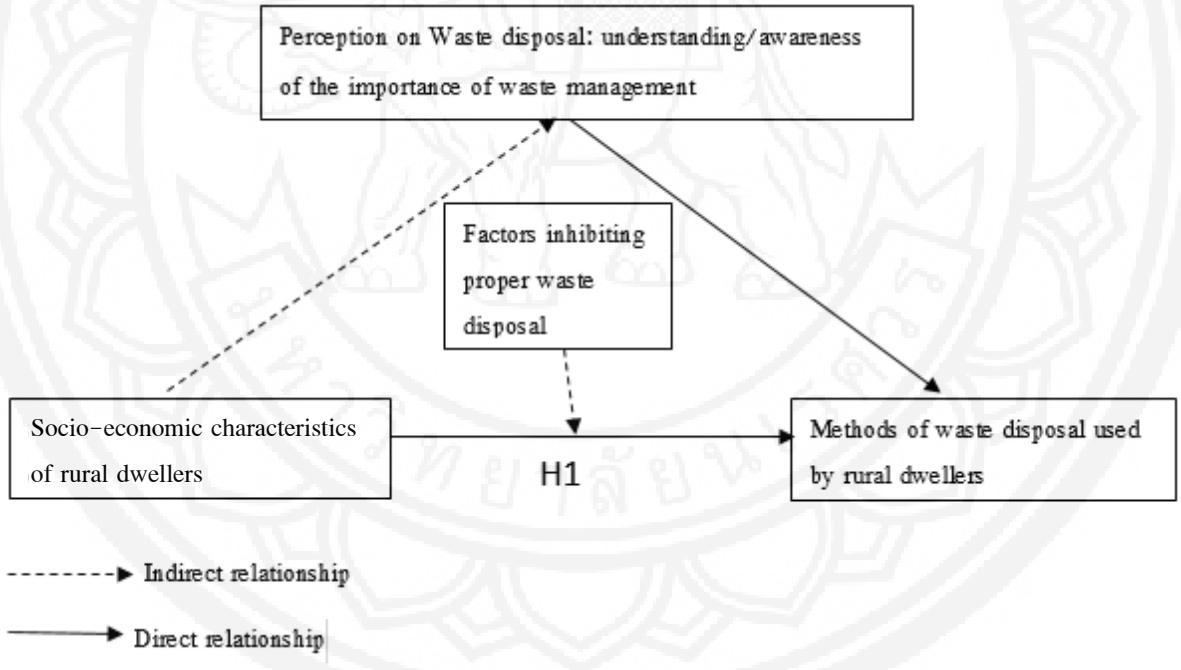

Figure 1 Research Framework.

Hypothesis 1: There is no significant relationship between selected socio-economic characteristics of the respondents and their methods of waste disposal.

The expectation of this study is to provide empirical data and useful information to policy makers to further strengthen the existing regulations in order to ensure that rural communities are clean and healthy for living. Concerned government and private organizations can also rely on findings of the study for proper planning and

implementation of programmes targeted at rural development, public health and environmental protection in the rural areas.

Methodology

The population of the study comprised the rural dwellers in Asa Local Government Area in Kwara State. A four-stage sampling was used for this study. The first stage was a purposive selection of Asa Local Government firstly because of high incidence of waste dumps and secondly because of its proximity to the state capital. In the second stage, 3 villages (Afon, Laduba, and Ogbondoroko) with high population density were purposively selected. Moreover, nearness to one another, easy access to the communities and cooperation at receiving visitors were among the factors that aided the choice of the 3 villages. For the third stage, snowball technique was used to compile the available household heads during the time of visit in the three villages to get a sample frame. Finally, stratified random sampling technique was then used to select 20% of the sample frame in each of the 3 villages. Forty-one of the 205 sample frame were selected in Afon, 30 out of 150 from Laduba while 22 of the 110 were chosen in Ogbondoroko respectively; to give a total sample size of ninety-three (93). Summary of the sampling is presented in Table 1.

Table 1 Sampling Procedure and Sample Size for the Study (n = 93)

Stage 1	Stage 2	Stage 3	Stage 4
LGA	**Villages**	**Sampling Frame**	**Sample Size**
		Snowball Technique	**Stratified Random Sampling (20% of Sample Frame)**
Asa	Afon	205	41
	Laduba	150	30
	Ogbondoroko	110	22
Total	**3**	**465**	**93**

Data was collected in the year 2018 through an interview schedule for the majority of the rural dwellers who could not read nor write (data from the survey supported this by revealing that more than 70% of the sample had no formal education while only about 20% attained a low level of basic education). The interview was conducted orally and the participants were asked questions around their waste management practices while their responses were recorded. A questionnaire containing same questions as those in the interview schedule was used to elicit information from those who could read and write. A four-point Likert-type scale (always used, often used, rarely used, and never used) was used to test for methods used by respondents to handle and dispose their wastes. A set of perception statements were collated to harvest their perception on importance of waste management.

The extent to which they agreed or disagreed with the statements were measured as follows; Strongly Agree (SA) = 4, Agree (A) = 3, Disagree (D) = 2, Strongly Disagree (SD) = 1. A cut-off point of 2.5 was derived by taking the mean of the possible scores of the options (SA, A, SD and D) as shown:

$$\text{Cut-Off} = \frac{4 + 3 + 2 + 1}{4} = \frac{10}{4} = 2.5$$

To this end, a ranking of mean scores were used to determine their perception on the importance of proper waste management. Mean scores equal to or above the cut-off ($x \geq 2.5$) are perceived to be significantly more important to the respondents than others that scored below it. Descriptive statistics such as frequency counts, percentages, and mean score were used to analyse the findings. The Pearson's Product Moment Correlation (PPMC) was used to test the hypothesis that was generated for the study.

Results and Discussion

Socio-economic Characteristics of the Respondents

The results in Table 2 showed that 76% of the sample falls below 50 years, with an average age of 44 years. This implies that the majority of the participants for this study are still in their active years. The activeness of the respondents as depicted by their average age may facilitate the adoption of good waste management practices. Furthermore, 60% have household sizes of 6-10 persons, with an overall average of 8 persons. Thus, indicating that the families are large and above the average household size of 5 persons as suggested by the National Population Commission (NPC) & ICF (2019). This is tending towards a high population density and it has been established that increase in population translates into higher amount of waste generation (Awopetu et al., 2014). This therefore means that each household could significantly contribute to larger amount of wastes as reported by (Ayanshola et al., 2015) that waste generation in Kwara State is magnificent.

A significant amount (66.7%) of the sample had no formal education implying that they are largely illiterates. A reversed result in terms of level of education might have probably worked in favour of better waste management practices because a number of innovations demand a certain level of literacy as education is key in the adoption of certain ideas (Ayanshola et al., 2015; Pan, 2020). The table also reflected that 77.4% are farmers by occupation. Interestingly, frequency of extension visits where respondents could have learnt about waste disposal and management was rather poor in the study area as 66.7% have never been visited by extension workers in the last 12 months. This result is corroborated by the findings of Ogunlade et al. (2017) who reported that extension services in Kwara State is almost non-existing for people living within the margins and is highly characterised by inadequate extension agents.

Table 2 Socio-economic Characteristics of the Respondents (n = 93)

Variables	Frequency (N = 93)	Percentage (%)	Mean
Age (Years)			**43.88**
20 – 30	11	11.8	
31 – 40	20	21.5	
41 – 50	41	44.1	
51 – 60	17	18.3	
> 60	4	4.3	
Household Size (Persons)			**8**
1 – 5	17	18.3	
6 – 10	56	60.2	
> 10	20	21.5	

Table 2 (Cont.)

Variables	Frequency (N = 93)	Percentage (%)	Mean
Gender			
Male	80	86	
Female	13	14	
Marital Status			
Single	2	2.2	
Married	60	64.5	
Divorced	1	1.1	
Widow	30	32.3	
Educational Level			
No Formal Education	62	66.7	
Primary Education	14	15.1	
Sec Education	5	5.4	
Tertiary Education	1	1.1	
Quranic Education	11	11.8	
Primary Occupation			
Farming	72	77.4	
Fish Farming	16	17.2	
Others	5	5.4	
Frequency of Extension Visits (Past 12 Month)			
0	62	66.7	
1 – 3	23	24.7	
> 3	8	8.6	
Cosmopoliteness			
Yes	52	55.9	
No	41	44.1	
If Yes (Farthest Distance Travelled)			
Within the State	39	75.0	
Outside the State	12	23.1	
Outside the Country	1	1.9	

Waste Handling and Disposal

A list of methods of waste disposal in the study was generated, mean scores (MS) were calculated and compared to the cut-off and the results were ranked as presented in Table 3. It was found that incineration (pit burning) was the most popular of the methods used in handling and managing waste (MS = 3.95). Communal disposal site was the next in rank (MS = 3.56) while family bin disposal (MS = 2.18) ranked third. Respondents also made use of communal pits (MS = 1.51), landfilling (MS = 1.20), and communal bins (MS = 1.11) among others. Additionally, burning in pits and communal disposal sites (mean scores greater than the 2.5 cut-off) were the most commonly used methods of waste disposal while recycling and composting (mean scores 1.0) were not in common use. These results are not too far from methods of disposal as found in neighbouring cities (Awopetu et al., 2014; Ogundele et al., 2018).

Table 3 Distribution of Respondents Based on Methods of Waste Disposal

Disposal Methods	AU	OU	RU	NU	Mean	Rank
	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Score	
Incineration (Pit Burning)	90 (96.8)	2 (2.2)	0 (0)	1 (1.1)	3.95	1st
Communal Disposal Site	74 (79.6)	4 (4.3)	8 (8.4)	7 (7.5)	3.56	2nd
Family Bin Disposal	24 (25.8)	7 (7.5)	24 (25.8)	38 (40.9)	2.18	3rd
Communal Pit Disposal	12 (12.9)	3 (3.2)	5 (5.4)	73 (78.9)	1.51	4th
Landfilling	6 (6.5)	0 (0)	1 (1.1)	86 (92.5)	1.20	5th
Communal Bin Disposal	2 (2.2)	1 (1.1)	2 (2.2)	88 (94.6)	1.11	6th
Family Pit Disposal	1 (1.1)	3 (3.2)	1 (1.1)	88 (94.6)	1.04	7th
Composting	0 (0)	0 (0)	1 (1.1)	92 (98.9)	1.01	8th
Recycling	0 (0)	0 (0)	0 (0)	93 (100)	1.00	9th

Note: AU = Always Used; OU = Often Used; RU = Rarely Used; NU = Never Used

Perception on the Importance of Waste Management in the Study

The results as highlighted on Table 4 showed the perception of the respondents on importance of waste management. Majority (96.8%) of the respondents strongly agreed that proper waste management is needed for clean environment and will reduce the breeding of vectors that act as a carrier of diseases (83.9%). They (74.2%) are also of the view that waste management will reduce environmental pollution. This may then imply that respondents understand the importance of waste disposal and management for clean enviroment, reduced pollution and reduced breeding of vectors that act as carrier of diseases. Given this perspectives, the rural dwellers would be expected to hygienically manage and dispose their wastes. However, respondents' perception towards waste disposal and management is not in tandem with this finding as their choice of methods of waste disposal as demonstrated in high adoption of open burning and low level of adoption of composting and recycling is a reflection of a complacent nature and this can easily result in serious health complications and possible damage to the environment. By implication, all things are not equal with the respondents as some factors may be responsible for non-adoption of proper and healthy waste disposal practices. This finding is consistent with a study by Friday & Iderawumi (2017) who found that despite being aware of the effects of improper solid waste management on their environment and health, rural people still indulge in insanitary waste disposal methods.

Table 4 Perception on Importance of Waste Management

Perception Statements	SA	A	D	SD	Mean	Rank
	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Score	
Waste management prevents diseases and is needed for clean environment.	90 (96.8)	3 (3.2)	0 (0)	0 (0)	3.97	1st
Waste management reduces the breeding of vectors that act as carriers of diseases.	78 (83.9)	14 (15.1)	1 (1.1)	0 (0)	3.83	2nd
Waste management reduces environmental pollution.	69 (74.2)	23 (24.7)	1 (1.1)	0 (0)	3.73	3rd
Waste management reduces threat to plant and is beneficial to living organism (ecosystem), deforestation etc.	21 (22.6)	72 (77.4)	0 (0)	0 (0)	3.23	4th
Waste management is used for composting organic waste which serves as fertilizer to plants.	10 (10.8)	78 (83.9)	5 (5.4)	0 (0)	3.05	5th

Table 4 (Cont.)

Perception Statements	SA	A	D	SD	Mean Score	Rank
	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)		
Waste management ensures proper and judicious use of land resources and conserve its aesthetic value.	3 (3.2)	88 (94.6)	2 (2.2)	0 (0)	3.01	6th
Waste management can be recycled for further production.	1 (1.1)	25 (26.9)	64 (68.8)	3 (3.2)	2.26	7th

Note: SA = Strongly Agree; A = Agree; SD = Strongly Disagree; D = Disagree

Factors Influencing Proper Waste Disposal and Management

A number of factors affecting the adoption of proper waste disposal and management were identified (Table 5). Results showed the severity of the constraints to waste management. Institutional factors (lack of official structures, adequate sanctions and non-availability of facilities) (MS = 3.87) was the most severe constraint to waste management in the study. This is because even though government has a measure of environmental sanitation, facilities for proper waste disposal are not available for use in the rural communities (Ibikunle et al., 2019). Previous studies showed that even where facilities were available, people tended to be non-compliant (Ogwu, 2018; Olalekan et al., 2019). Poor funding by government (MS = 3.67), illiteracy of the people (MS = 3.44), and limited technology (MS = 3.19) were identified as contributory factors to the adoption of proper waste disposal and management among the respondents. Others include: poor strategies for raising awareness and creating enlightenment (MS = 3.18), inadequate power supply (MS = 3.04) and inadequate extension agents (MS = 3.02) that will educate people on implications of inappropriate waste dumping. Remarkably, poverty (MS = 1.54), although not ranked as a serious constraint, was recorded as one of the factors that contributes to unsuitable waste management in the study. Similarly, the poverty of the people was not considered as an important factor that influenced their proper waste management as it fell below the 2.5 cut-off mark. This result also suggests that the respondents in this study may not be as socio-economically vibrant as their counterparts in the state capital who were willing to pay for waste disposal (Adebo & Ajewole, 2012; Ayanshola et al., 2015).

Table 5 Factors Influencing Proper Waste Management

Factors	VS	S	LS	NC	Mean Score	Rank
	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)		
Institutional factors.	81 (87.1)	12 (12.9)	0 (0)	0 (0)	3.87	1st
Poor funding by the government.	80 (86.0)	2 (2.2)	7 (7.5)	4 (4.3)	3.67	2nd
Illiteracy of the people.	53 (57.0)	28 (30.1)	12 (12.9)	0 (0)	3.44	3rd
Limited technology.	20 (21.5)	71 (76.3)	2 (2.2)	0 (0)	3.19	4th
Poor strategies for raising environmental awareness.	20 (21.5)	71 (76.3)	1 (1.1)	1 (1.1)	3.18	5th
Inadequate power supply.	28 (30.1)	53 (57.0)	0 (0)	12 (12.9)	3.04	6th
Inadequate extension workers in educating people on implication of inappropriate waste dumping.	4 (4.3)	88 (94.6)	0 (0)	1 (1.1)	3.02	7th
Poverty of the people.	9 (9.7)	1 (1.1)	21 (22.6)	62 (66,7)	1.54	8th

Note: NC = Not a Constraint; LS = Less Severe; S = Severe; VS = Very Severe

Relationship between Socio-economic Characteristics of Respondents and their Methods of Waste Disposal

The study tested a null hypothesis which stated that: there is no significant relationship between selected socio-economic characteristics of respondents and their methods of waste disposal. The selected characteristics included: age, educational level, household size, and number of extension contact of the respondents. Result of Pearson Product Moment Correlation (PPMC) (as shown in Table 6) depicts that no significant relationship existed between respondents' ages and their methods of waste disposal ($r = 0.114$, $p = 0.276$; p-value > 0.05). Hence, the null hypothesis is accepted and alternative is rejected.

As for respondents' level of education ($r = -0.004$, $p = 0.006$), the null hypothesis is rejected and alternative is accepted because result showed that a significant relationship existed with their methods of waste disposal. With respect to direction of significance, the PPMC (Table 6) showed that educational level (p-value < 0.05) had a negative relationship with their methods of waste management. This means that their education level has an inverse correlation with the methods of waste disposal. This finding may be attributed to the fact that majority of the respondents were found to have no formal education. In essence, an increase in level of education would make the people less likely to keep using their current methods of waste disposal; thus, further proving that higher levels of education could translate to better adoption of hygienic waste management practices as reported in similar studies (Ayanshola et al., 2015; Ogwu, 2018; Pan, 2020).

On the other hand, household size ($r = 0.009$, $p = 0.050$) and the contact with extension agents ($r = 0.016$, $p = 0.045$) had significant positive relationships with respondents' methods of waste disposal. Therefore the null hypothesis is rejected and the alternative is accepted given that p-values were less than 0.05, implying that significant relationships existed with their methods of waste disposal. The implication is that with every increase in number of people in the household, there is likely to be an improved adoption of better methods of waste management. Similarly, adequate contact with extension agents would improve the understanding of the rural dwellers of the relationship between waste management and diseases along with other environmental hazards (Awopetu et al., 2014; Ayanshola et al., 2015; Ogundele et al., 2018) that come along with inadequate waste management.

Table 6 Pearson Product Moment Correlation Analysis between Selected Socio-economic Characteristics of the Respondents and their Methods of Waste Disposal

Variables	Pearson Correlation (r-value)	p-value	Decision
Age	0.114	0.276	Not Significant
Educational Level	-0.004*	0.006	Significant
Household Size	0.009**	0.050	Significant
Extension Contact	0.016**	0.045	Significant

Conclusion

It could be concluded that rural dwellers have the understanding that proper waste disposal implies clean, hygienic and safe environment. They also have the understanding that when wastes are dumped indiscriminately, it exposes people to vectors that spread diseases and increase environmental pollution. Unfortunately, the waste disposal commonly practiced by the rural dwellers were burning and dumping at open sites. It was found that lack of adequate sanctions, non-availability of facilities, poor funding by the government, illiteracy of the

people, and poor strategies for raising awareness and creating enlightenment are the factors inhibiting proper waste management.

Based on these findings, it is recommended that the rural dwellers can pool resources together to procure waste disposal facilities rather than depend on government to supply them. Secondly, certain members of the community can be identified (through further research) and encouraged by extension agents to form association where members can continue to educate and enlighten themselves on the importance of proper waste disposal and management. This is to further reinforce the link between waste disposal and diseases. Finally, sanctions can be fully implemented to enforce compliance in addition to a concerted effort by government to provide adequate fund for procurement, distribution and management of waste disposal and management in the rural areas. This is necessary, given that the current practice of waste disposal is hazardous to the environment and the people themselves.

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