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EDUCATIONAL LEVEL OF RESIDENTS AND ATTITUDE TOWARDS SOLID WASTE DISPOSAL IN CALABAR EDUCATION ZONE OF CROSS RIVER STATE, NIGERIA

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Abstract:
The purpose of this study was to investigate of educational level of residents on their attitude towards solid waste disposal in Calabar Education Zone of Cross River State. To achieve the purpose of the study one research question guided the study and one hypothesis was tested in the study. Ex-post facto research design was adopted for the study. A sample of 576 respondents from a population of 203,126 was used for the study. The questionnaire was the instrument for data collection. The reliability estimate of the instrument was established through Cronbach Alpha reliability method with a coefficient of 0.89 which was high enough. One-Way Analysis of Variance (ANOVA) was the statistical techniques utilized to test the hypothesis under study at .05 level of significance. The result of the analysis revealed that, educational level of residents significantly influenced their attitude towards solid waste disposal in Calabar Education Zone of Cross River State, Nigeria. Based on the finding, it was recommended that Government should adequate educational engagements for residents with low educational level in solid waste disposal activities.

Key words: Educational level, Residents, Solid waste, Attitude, Disposal.

Introduction

The place of solid waste and its disposal in the livelihood and living standard of humans cannot be over-emphasised. 'Solid waste' refers to any discarded or unwanted solid material generated from domestic, industrial, commercial, agricultural, or institutional activities that is not liquid or gaseous in nature (Adeoye *et al*., 2024). As societies expand and economies diversify, the volume and complexity of waste produced also grow, requiring increasingly sophisticated and context-specific strategies for handling, disposal, and reduction. Solid waste disposal (SWM) has become an increasingly critical issue globally, particularly in developing countries where rapid

urbanization, industrial growth, and population expansion are not matched by corresponding advances in waste handling infrastructure, public policy, and behavioural change. Inadequate disposal of such waste results in severe environmental degradation, public health hazards, and negative socio-economic consequences. SWM encompasses not just household garbage but also construction debris, industrial by-products, agricultural waste, and increasingly, electronic waste.

In Nigeria, the challenge of solid waste disposal is exacerbated by weak enforcement of environmental laws, inadequate funding, inefficient institutional frameworks, and limited public awareness (Inah *et al*., 2022). The United Nations Environment Programme (UNEP) (2024) estimated that Nigeria generates approximately 32 million tonnes of solid waste annually, making it one of the highest waste-producing countries in sub-Saharan Africa. Alarmingly, only 20–30% of this waste is formally collected and disposed of properly. The rest is indiscriminately dumped in open spaces, gutters, rivers, and unauthorized landfills, leading to the proliferation of diseases, flooding, and environmental pollution. Open burning, another widespread practice, adds a layer of air pollution and respiratory risk to the existing burden of improperly disposed waste.

Cross River State, and particularly the Calabar Education Zone, which includes Calabar Municipality, Calabar South, Akpabuyo, Akampa, Bakassi, Odukpani, and Biase, face many of these challenges, despite their unique history as a well-planned urban centre and a major tourist destination. Calabar has often been praised for its relative cleanliness, particularly during the early years of its "Green and Clean Calabar" initiative. However, in recent years, the city has witnessed a regression in waste disposal standards. Public bins overflow, illegal dumpsites proliferate, and drainage systems are routinely clogged with refuse, especially during the rainy season. Efforts

to address these issues include policy interventions such as the establishment of the Calabar Urban Development Authority (CUDA), partnerships with private sector contractors for waste collection, expansion of landfill sites, and monthly environmental sanitation exercises. While these strategies have merit, their success remains limited in part due to inconsistent implementation and the absence of deep-rooted behavioural change among residents. Programmes such as the "Green and Clean Calabar" campaign were initially successful in fostering civic pride and cleaner public spaces, but such gains have not been sustained in the absence of continuous engagement and adequate public education.

Emerging literature has pointed out that waste disposal challenges are not solely technical or infrastructural in nature; they are also deeply behavioural. The attitudes and practices of residents toward waste disposal are shaped by a variety of individual and cultural factors. Research indicates that behaviours toward environmental responsibility and waste disposal are significantly influenced by demographic variables such as education level, (Chikeka *et al*., 2024). For example, individuals with higher levels of education are generally more aware of the health and environmental consequences of improper waste disposal and are therefore more likely to adopt proper waste disposal practices.

In Calabar Education Zone, this personal variables (education level) may significantly affect how residents perceive and practice solid waste disposal. Illegal dumping, indiscriminate littering, and improper sorting of waste remain common practices, even in neighbourhoods with access to waste collection services. These practices suggest that infrastructural availability alone is insufficient to ensure proper waste disposal. Without behavioural change anchored on improved attitudes, even the best systems will underperform.

This study, therefore, seeks to bridge this gap by investigating the influence of education level on residents' attitudes toward solid waste disposal in Calabar Education Zone. Understanding this relationship is crucial for designing targeted, effective, and sustainable strategies that promote environmentally responsible behaviours and enhance public health outcomes.

Attitude, in the context of this study, refers to an individual's predisposition or learnt tendency to respond in a consistent manner (positively or negatively) toward a specific object, practice, or situation—in this case, solid waste disposal practices within the Calabar Education Zone. According to Ajzen (1991), attitude comprises three primary components: the cognitive (beliefs or knowledge about the behaviour), affective (feelings or emotions toward the behaviour), and behavioural (the intention to act in a certain way). Applying this model to waste disposal, a resident's attitude toward disposing of garbage properly might involve knowledge about the risks of improper disposal (cognitive), concern or disgust toward dirty surroundings (affective), and a willingness to sort and dispose of waste correctly (behavioural).

In Calabar, where residents encounter a variety of environmental challenges linked to urbanization, attitudes toward waste disposal often reflect both individual and community-level factors. For example, a resident who believes that dumping refuse in a nearby stream contributes to flooding and disease (cognitive) may also feel distress or embarrassment when the environment is dirty (affective) and, as a result, make efforts to use a designated bin or hire a waste collection service (behavioural). Conversely, where awareness is low or environmental degradation has become normalized, residents may show apathy or fatalism toward waste issues.

Literature Review

A review of recent empirical studies on educational level and residents' attitudes toward solid waste disposal in Calabar Education Zone and Cross River State reveals a consistent relationship between educational attainment and environmental responsibility.

Unoh, E. E. and Ajom, L. B. (2023), in their study published in the Journal of Environmental and Tourism Education, specifically examined the influence of teachers' educational level on their attitude toward solid waste management in Calabar Education Zone. Their findings indicate that higher educational attainment significantly predicts more positive attitudes toward proper waste disposal practices. The authors argue that education enhances environmental awareness, critical thinking, and compliance with sanitation regulations. They conclude that formal education plays a vital role in shaping pro-environmental behaviour and recommend environmental education integration at all schooling levels.

Similarly, Ubi, A. B., Efut, E. N., and Oyamo, V. I. (2023), writing in the Prestige Journal of Education, investigated demographic variables influencing urban dwellers' attitudes toward solid waste disposal in Calabar Education Zone. Although their study considered multiple demographic factors, educational level emerged as a strong determinant of positive disposal attitudes. Residents with tertiary education demonstrated greater environmental concern and were more likely to support organized waste management systems. The study emphasizes that education improves knowledge of environmental consequences and encourages responsible waste-handling practices.

Earlier, Ubi, A. B. and Bassey, O. S. (2021), also in the Journal of Environmental and Tourism Education, examined economic-based demographic variables and attitudes toward solid waste disposal in Calabar Education Zone. While focusing primarily on economic status, the study found a close interaction between income and educational attainment in shaping environmental attitudes. Individuals with higher educational qualifications displayed stronger commitment to proper waste disposal and were less likely to engage in indiscriminate dumping. The researchers posit that education influences environmental values, which in turn affect behaviour.

Expanding the scope beyond Calabar but within Cross River State, Akpana Beshel, C., Asor, L. J., Ojong, A. A., Betiang, P. A., and Ironbar, V. E. (2024), in the International

Journal of Management and Sustainability, explored socio-demographic predictors of solid waste management practices. Although their primary focus was age, gender, and self-concept, the study acknowledged that educational exposure significantly shapes environmental self-concept and pro-environmental attitudes. The authors argue that education strengthens personal responsibility and environmental consciousness, thereby influencing waste management behaviour.

Collectively, these studies demonstrate that educational level is a critical variable influencing residents' attitudes toward solid waste disposal in Calabar Education Zone and the wider Cross River State. The literature consistently supports the view that higher educational attainment enhances environmental awareness, fosters positive attitudes, and promotes responsible waste disposal practices. However, while most studies establish significant relationships, there remains a need for deeper investigation into how specific types of education (formal, non-formal, and environmental education programmes) directly influence behavioural change in the study area.

Statement of the problem

The need for people to develop positive attitudes and participate actively in solid waste disposal activities has become imperative in view of the littering and unhealthy condition of our environment in the last decade. Despite efforts by the government and waste disposal agencies towards evacuation of waste from residential and commercial areas, the high volume of waste generated and the manner in which it is being disposed remain a source of concern to various stakeholders in the field of environmental protection and disposal. One of the ways adopted by waste disposal experts and authorities is the provision of additional refuse bins and the formulation of stern penalties for those who litter the environment. This has only yielded a few positive outcomes. Despite the efforts of the government towards improving the environmental conditions of the study area, effective solid waste disposal seem to have defied various solutions.

In most cases, people tend to shun responsibility for keeping their surroundings

clean and blame the government for not doing enough to regularly evacuate the volumes of waste generated around their homes. They also blame other residents for the filthy nature of their environment. These accusations have further distanced people from participating in environmental conservation in the study area. As a result, it has become a common scene to see streets in the Calabar Education Zone, footpaths, open spaces, gutters, road pavements, etc., overtaken by waste. These scenes have become aesthetic nuisances, breeding grounds for disease-causing vectors, and blockades to drainage channels, among other things. It is based on this that the researcher seeks to investigate the fundamental question: how does educational level influence the attitude of residents towards solid waste disposal in the Calabar Education Zone of Cross River State? The purpose of this study is therefore to determine the influence of Educational level of residents on their attitude towards solid waste disposal in Calabar Education zone of Cross River State, Nigeria.

Research question and hypothesis

How does educational level of residents influence their attitude towards solid waste disposal in Calabar Education Zone of Cross River State?

There is no significant influence of the educational level of residents on their attitude towards solid waste disposal in Calabar Education Zone of Cross River State.

Methodology

The research design adopted for this study is the Ex-post facto. The study was carried out in the Calabar Education Zone of Cross River State. The study area consists of 7 LGAs namely; Akamkpa, Akpabuyo, Bakassi, Biase, Calabar Municipality, Calabar South and Odukpani. According to Balogun (2009), the study area lies between latitudes $4^{0}27^{'}$N and $5^{0}32^{'}$N and longitudes $7^{0}50^{'}$E and $9^{0}28^{'}$E. The population of this study comprised of the 203,126 adults and youths (strictly from 18 years and above) across all the LGAs within the study area. The study adopted a multi-stage sampling technique involving the stratified and purposive sampling techniques. To ensure

adequacy of sample size, the Taro Yamene's method of estimating sample size was applied with sample size of 576. A questionnaire designed by the researcher were used to elicit data for the study. It is tagged the "Personal Variables and Residents' Attitude towards Solid waste disposal Questionnaire" (PVRASWMQ). The instrument was validated by three experts with a reliability coefficient of 0.89 using Cronbach alpha technique. The questionnaire were administered to the respondents by using trained research assistants within the sampled communities. Data was analyzed using Analysis of Variance technique.

Results and Discussion of findings

How does educational level of residents influence their attitude towards solid waste disposal in Calabar Education Zone of Cross River State? To answer this research question, descriptive statistics of mean and standard deviation was employed. The result of the analysis is presented in Table 1.

TABLE 1

Descriptive statistics of the influence of educational level of residents on their attitude towards solid waste disposal. (N=576)

Educational level of residents	N	$\bar{x}$	SD
Primary– 1	162	56.36	4.90
Secondary– 2	251	58.26	5.02
Tertiary – 3	163	58.33	4.57
Total	576	57.74	4.93

The result on Table 1 revealed that residents' whose educational level was primary had a mean of 56.36 and standard deviation of 4.90, educational level was secondary had a mean of 58.26 and standard deviation of 5.02, while those educational level was tertiary had a mean of 58.33 and standard deviation of 4.57. From the result it can be observed

that residents' whose educational level are tertiary had a higher mean value. This implies that they have better attitude towards solid waste disposal than the others.

There is no significant influence of the educational level of residents on their attitude towards solid waste disposal in Calabar Education Zone of Cross River State.

The independent variable in this hypothesis is educational level of residents (Primary, Secondary and Tertiary); while the dependent variable is their attitude towards solid waste disposal. To test this hypothesis, the attitude of residents towards solid waste disposal based on educational levels (Primary, Secondary and Tertiary) were compared using One-Way Analysis of Variance (ANOVA). The result of the analysis is presented in Table 2

TABLE 2

Summary data and one-way ANOVA of the influence of educational level of residents on their attitude towards solid waste disposal. (N=576)

Source of variance	SS	df	Ms	F	Sig of F
Between group	433.838	2	216.919	9.175	.000
Within group	13547.647	573	23.643		
Total	13981.484	575			

* Significant at p <.05 level, df= 2, 573.

The result on Table 2 revealed that the F-value of 9.175 at p=.000. Since the p (.000) is less than p (.005), the null hypothesis is rejected. This result therefore implied that the educational level of residents significantly influenced their attitude towards solid waste disposal. Since educational level of residents had a significant influence on their attitude towards solid waste disposal, a post-hoc analysis was carried out using Fishers' Least Significant Difference (LSD) multiple comparison analysis. The result of the analysis is presented in Table 3

TABLE 3

Fisher's Least Significant Difference (LSD) multiple comparison analysis of the influence of educational level of residents on their attitude towards solid waste disposal.

LSD

(I) Educational level of residents	(J) Educational level of residents	Mean Difference (I-J)	Std. Error	Sig.
Primary	Secondary	-1.90492(*)	.49004	.000
	Tertiary	-1.96713(*)	.53944	.000
Secondary	Primary	1.90492(*)	.49004	.000
	Tertiary	-.06221	.48913	.899
Tertiary	Primary	1.96713(*)	.53944	.000
	Secondary	.06221	.48913	.899

* The mean difference is significant at the .05 level.

The result of the analysis in Table 3 showed that residents whose educational level was primary were significantly different in their attitude towards solid waste disposal from those whose educational levels were either secondary or tertiary. Also, residents whose educational levels were secondary were significantly different from those who were tertiary in their attitude towards solid waste disposal.

The result of the hypothesis indicated that, educational level of residents significantly influenced their attitude towards solid waste disposal. The finding is in line with the view of Miner *et al*., (2020) who revealed educational level as having a significant effect on the residents' awareness and dispositions towards willingness to participate in e-waste disposal. This invariably meant that for the educated ones, there was no profound effect of educational level on the difference between their awareness and disposition towards willingness to participate in e-waste disposal. The study of Miner *et al*., (2020) was adjudged as being applicable for this review against the backdrop of its survey of the difference between residents' awareness and willingness to participate in e-waste disposal based on the effect of their educational level. Market

traders' knowledge, attitude, and practices of solid waste disposal in Calabar Municipality, Nigeria, with focus on new implications for global health education. Ekoro *et al*., (2021) also revealed that educational level had a significant association with attitude towards solid waste disposal. This study was considered pertinent for this review on the grounds that it ascertained the extent of association between educational level and attitude towards solid waste disposal.

Chukwuone *et al*., (2022) also revealed educational level as a significant predictor of attitude towards each of disposing waste through informal waste collectors/cart pushers, and burning. It also showed a significant yet negative prediction on disposing waste in open waste dumps or spaces along the street or near a residence, thus meaning that the more one is educated, the less likely he/she would have the attitude of disposing waste in open waste dumps or spaces along the street or near a residence. This study is seen as being necessary for this review against the backdrop of its investigation of educational level as a factor of attitude towards waste disposal.

Maduabuchi *et al*., (2023) also revealed educational level as having a significant association with attitude towards waste disposal among the residents. The finding of this study accepted as being necessary for this review against the backdrop of its enquiry of the association between educational level and attitude towards waste disposal among residents of a suburb. Omekwe and Alagoa (2023) also revealed educational level as having a significant positive correlation with attitude towards solid waste generation and disposal. The finding of this study found relevance for this review with reference to its analysis of the extent of correlation between educational level and attitude towards solid waste generation and disposal.

Conclusion

The study reveals that residents with higher educational levels tend to have more positive attitudes towards solid waste disposal, recognizing the importance of proper waste disposal and the risks associated with poor waste disposal. Income level also influences attitudes, with higher-income residents more likely to prioritize waste disposal and invest in proper waste disposal methods. It is therefore recommended that Government should implement education and awareness programmes targeting residents with lower educational levels, highlighting the importance of proper solid waste disposal and its impact on public health and the environment.

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