Economic-Based Demographic Variables and Attitudes of Urban Dwellers towards Solid Waste Disposal in Calabar Education Zone, Cross River State

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ABSTRACT

This study examined economic-based demographic variables and attitude of urban dwellers towards solid waste disposal in Calabar Education Zone, Cross River State, Nigeria. A descriptive survey research design was adopted for this study. Population consisted of all adults and youths across the study area. A sample of 600 respondents was selected using stratified random and accidental sampling techniques. A questionnaire tagged Economic-Based Demographic Variables and Attitude of Urban Dwellers towards Solid Waste Disposal Questionnaire (EBDVASWDQ) was the instrument used for data collection. The reliability of the instrument was established through the Cronbach Alpha reliability coefficient and the internal consistency was estimated to be 0.76. One way analysis of variance (ANOVA) and Independent T-test were used to test the study's hypotheses. The analysis revealed that each of the investigated economic-based demographic variables of occupational status and income level significantly influenced attitude of urban dwellers towards solid waste disposal. Inclusive among the recommendations was that the government should provide waste bins to individuals at low cost and waste receptacles should be located near households for easy access.

Key words: solid waste disposal, occupation, income, attitude, economic-based

Introduction

The global demand for production of food, goods and services to satisfy human needs is increasing. All industrial and domestic activities involved in the production of goods and services generate waste. When waste is not properly managed or disposed of, it poses health challenges and constitutes an environmental problem. The earth is the suitable planet for human habitation. It is the only planet capable of accommodating the over seven billion human population of the world. Certain factors within the human-dominated biosphere affect life, growth and development. One of such is waste. Almost everybody is guilty of releasing one form of waste or the other. Increased waste generation coupled with indiscriminate disposal is associated with increased socio-economic activities, individual lifestyle and consumption pattern, urbanization, and population explosion.

These phenomena make solid waste generation and disposal faster than the capacity of local authorities to manage properly. Although the environment, to some extent, has the capacity to absorb waste, the amount of waste generated and disposed these days is beyond nature's capacity to absorb through natural processes; hence, the need for proper waste collection and disposal. An ideal natural environment serves human beings in three basic dimensions, namely, as a resource bank for raw materials, as a habitat, and as a sink for waste absorption (Daramola, 2016). Ndukwe, Uzoegbu, Ndukwe and Agibe (2019) assert that the dumping of solid waste into the environment in such large quantities has become a problem that nature can no longer handle. This implies that the amount disposed at a given time outweighs nature's ability to sink waste. Adekola, Iyalomhe, Paczoski, Abebe, Pawłowska, Bąk and Cirella (2021) assert that the magnitude of waste in our cities is a direct result of the inefficient mode of using our materials and energy resources.

Studies have shown that there are strong indications implying that individuals or group attitudes and awareness towards waste disposal are critical in the effort of the government to harness waste management challenges. While developed urban communities have a well organize and improved waste disposal system, unsanitary dumping of waste is a common practice in Calabar Education Zone. Ideally, a negative attitude is one of the leading causes of indiscriminate waste disposal in our cities at different places and time. People, howbeit, dispose waste indiscriminately not minding the environmental and health effect of their action. This has in no small measure contributed to the deplorable state of our environment. This negative attitude has persisted owing to the fact that most households in the urban areas of Calabar Education Zone do not have waste bin; they rather dispose waste at any available open space, gutter or road. The inability of the government to enforce already existing environmental sanitation laws, individual's lack of knowledge and skills of waste recycling coupled with far distance from household to waste receptacle point, all contribute to the challenges of waste disposal.

For an individual in any given society to live a healthy life depends on many things: the quality of food we eat; the quality of water we drink; the quality of air we breathe and the cleanliness of our surroundings. Therefore, a carefree attitude to waste disposal is a threat to healthy living. Consequent upon the illegal dumping of toxic and hazardous wastes in Koko village in the then Bendel State in 1987, government at federal and state levels through the Ministry of Environment promulgated environmental laws and decrees that would bring a positive change of attitude to maintain a disease free environment. Most of these laws are weak and neglected. Therefore, the spectacle of indiscriminate waste disposal is still prevalent. Individual's attitude most times is at variance with government policies and decrees. It is against this backdrop that the need for environmental educators to rise to the challenge becomes imminent to raise environmental consciousness and awareness of people through education.

Factors presumed to have an effect on attitude towards solid waste disposal are their economic-based demographic variables of monthly income and occupation. Igwe and Mgbasonwu (2017) assert that people's income level determines the littering of the environment, the rich will want to satisfy themselves by buying more goods; the more goods they buy, the more they generate waste. Tassie (2018) observed that the higher the level of people with jobs, the greater their purchasing power and the amount of waste generated and disposed of. Studies have shown that as people have better jobs and/or their income rises, household waste generation rises, though many have argued that this is more of an attitude problem than income, as every individual, rich or poor has an inner drive towards certain actions or behaviours. In Calabar Education

Zone, the issue of economic-based demographic variables and attitude towards solid waste disposal appears not to have due attention, hence the purpose of this study.

Income level implies the amount of money flow which a particular individual, household, organization or an agency gets within a given period of time. It is usually checked on a daily, weekly, monthly or on annual basis. The common norm is that when there is abundance of income, it is accompanied by an almost equal level of purchasing or requiring services, thus implying that there will be a lot of "waste" generated (Ayenew, Tilahun, Erifo & Tesfaye, 2019). On the other hand, it is commonly believed that where there is scarcity of income, there will be less "waste" generated and there will be a high level of such persons indulging in waste minimization practices. Another dimension in which income level can influence waste disposal is through the "willingness to pay" dimension. This is concerned with the voluntary payment for "waste" to be evacuated. Research has revealed income level having varying results on disposal of solid waste.

An individual's occupation is the persons' job or profession. One's job or profession is an endeavour (activity) which occupies one's time and most times, people get involved in an occupation so as to get paid. It can also be termed as the principal business of an individual's life or a vocation. The most distinguishing feature between people in their occupations is the fact about either being a professional or a non-professional (Tassie & Endalew, 2020). A professional is one who is trained to be engaged in a particular activity than being an amateur while the reverse is the case for a non-professional. In research parlance, research into occupational status as it affects an individual's knowledge, attitude, behaviour or awareness is borne out of the belief that occupation can have an influence on any of the aforementioned domains of an individual.

An assessment of urban households' solid waste generation and disposal was conducted by Agunloye, Afolabi and Kosoko (2015) and their study's outcome reported monthly income as a determining factor of waste disposal dispositions. Egbu, Umunakwe and Ogbonna (2015) determined behavioural/household indicators of solid waste generation and management. Monthly income level was observed as a significant correlate of solid waste management tendencies. Preference for improved solid waste management attributes among urban households was probed by Obidi and Adeoti (2015) and they observed that number of working household members had a positive predictive impact on preference for improved waste management services. Daramola (2016) conceptualised a model of environmental sanitation tendencies of urban dwellers. The study's finding was that monthly income was an indicator of displaying positive environmental sanitation behaviours.

An assessment of socio-economic factors and choice of waste disposal methods by Opoko and Oluwatayo (2016) showed that employment structure was a significant contributor towards explaining choice of waste disposal method by the respondents. A study of the determinants of willingness to pay for disposal of households' solid waste by Adesope, Bolaji-Olutunji, Apata and Odediran (2017) revealed that household income was an insignificant driver of willingness to pay. Alhassan, Asante, Oteng-Ababio and Bawakyillenuo (2017) inquired the influence of socio-psychological factors on households' willingness to pay for improved solid waste management services. The finding indicated that occupation type of household head was a major driver of willingness to pay for improved services. Social factors and waste disposal practices were examined by Femi, Nongo and Fasina (2017) and they reported that occupation had no significant association with waste disposal dispositions. An economic assessment of household waste generation, disposal and management by Igwe and Mgbasonwu (2017)

revealed that monthly income level significantly predicted attitude towards waste management.

Ini-mfon, Ubokudom and Ubong (2017) investigated households' willingness to pay for improved solid waste management and observed that households' monthly expenditure level positively influenced willingness to pay. An enquiry of perceptions of solid waste disposal practices by Kaoje, Sabir, Yusuf, Jimoh and Raji (2017) showed that employment structure was not a determining factor of waste disposal practices. An investigation of willingness to pay for improved solid waste management was conducted by Onukogu, Yacob, Adamu and Zainudin (2017). They found out that income level was a significant factor. Willingness to pay for improved household solid was collection was conducted by Ndau and Tilley (2018). They reported that employment status was not a significant predictor of willingness to pay. Tassie (2018) verified household behaviour and demand for better solid waste management services. The finding indicated that household monthly income was a significant predictor of willingness to pay for improved solid waste management services.

Ayenew, Tilahun, Erifo and Tesfaye (2019) queried household willingness to pay for improved solid waste management. The study's outcome showed that income was a key determinant of solid waste management improvement. Household perception and willingness to pay for improved waste management services was researched upon by Manga, Oru and Ngwabie (2019). From their finding, employment type was found to be a significant indicator of willingness to pay for waste management services. An enquiry of environmental and health impacts of solid waste disposal carried out by Ndukwe, Uzoegbu, Ndukwe and Agibe (2019) showed that employment status was associated with very unsatisfactory waste disposal methods. Folasade, Titilope and Olushina (2020) studied the pattern and indicators of rural households' choice of solid waste disposal methods. Their finding was indicative of occupation as a significant contributor towards choice of waste disposal method. An inquiry of socio-economic and willingness to pay for solid waste disposal services by Madukwe, Ojeniyi and Ude (2020) revealed occupation as an insignificant driver of willingness to pay for the services.

A probe of public perceptions towards solid waste management practices by Olukanni, Pius-Imue and Joseph (2020) revealed income level as an indicator of attitudes, practices and perceptions towards solid waste management. Drivers of households' payments for waste disposal and engagement in recycling behaviours was ascertained by Omotayo, Omotoso, Daud, Ogunniyi and Olagunju (2020). Their finding revealed households' income as a significant driver of payments for waste and recycling behaviour adoption. Tassie and Endalew (2020) examined willingness to pay for improved solid waste management services and reported that occupation was an insignificant determinant of willingness to pay for the services. Public perception and awareness of waste management among urban dwellers was investigated by Adekola, Iyalomhe, Paczoski, Abebe, Pawłowska, Bąk and Cirella (2021). Their finding showed that occupation was an influential determining factor of perception and behaviour towards waste management. Alagbe, Alagbe, Okocha, Ojewumi and Ayeni (2021) evaluated effect of livelihood assets on solid waste sanitation attitudes. The study's outcome showed that income level was indicative of waste sanitation behaviour.

Statement of the Problem

The ever-increasing waste generation in our cities has become unbearable, making it difficult for local environmental sanitation authorities to manage. It is common to see water channels, roads and gutters blocked or littered with all kinds of waste. Waste materials, either

biodegradable or non-biodegradable pose serious threats to human health and the environment. A heap of waste constitutes a breeding ground for the disease vectors. Indiscriminate waste disposal is a clear violation of environmental laws. Indiscriminate waste disposal endangers public health, hinders efforts to maintain a beautiful, clean and safe environment. In Calabar Education Zone, it is common to see people litter their surroundings with pure water sachets, bury waste under the ground, throw waste in any nearby bush, river or into the gutter when rain falls. This negative attitude needs to be curtailed and discouraged because indiscriminate waste disposal contaminates water bodies, affects air quality, blocks drainages thereby leading to flooding. It also constitutes land pollution and an environmental hazard which the residents may not be aware of.

Persistent waste disposal problems in our cities are strongly linked to weak institutional capacity in the enforcement and implementation of already existing environmental laws. Regrettably, the confidence of the citizenry on the ability of local waste management agencies diminishes at the sight of heaps of refuse on the road. Despite the effort of Cross River State Government through the Calabar Urban Development Authority (CUDA) Cross River State Ministry of Environment to maintain clean, diseases and refuse free environment by the provision of refuse bins; ensuring regular street sweeping; provision of trucks for the evacuation of waste, the reality of indiscriminate waste disposal is still far from expectation. People seem not to show concern about the cleanliness of their environment; they prefer dumping of refuse at places of their convenience rather than the refuse collection points without considering the health and environmental implication of their actions. Could it be that economic-based demographic variables such as occupation status and income level influence attitude of urban dwellers towards solid waste disposal in Calabar Education Zone, Cross River State?

Hypotheses

The following hypotheses were formulated for the study.

1. Occupational status does not significantly influence the attitude of urban dwellers towards solid waste disposal
2. Income level does not significantly influence the attitude of urban dwellers towards solid waste disposa

Methodology

A descriptive survey research design was adopted for this study. The study was carried out in Calabar Education Zone of Cross River State. Population consisted of all adults and youths across the study area. A sample of 600 respondents was selected using stratified random and accidental sampling techniques. A questionnaire tagged Economic-Based Demographic Variables and Attitude of Urban Dwellers towards Solid Waste Disposal Questionnaire (EBDVASWDQ) was the instrument used for data collection. The reliability of the instrument was established through the Cronbach Alpha reliability coefficient and the internal consistency was estimated to be 0.76. One-way analysis of variance (ANOVA) and Independent T-test was used to test the study's hypotheses.

RESULTS

HO: Occupational status does not significantly influence the attitude of urban dwellers towards solid waste disposal

The hypothesis was analysed using independent t-test and tested at .05 levels of significance. The result of the analysis is presented in Table 1.

Table 1: Independent t-test analysis of the influence of occupational status on attitude of urban dwellers towards solid waste disposal (N=561)

Occupational status	N	X	S. D	t.cal
Professional	98	52.939	2.265	
				4.749*
Non-professional	463	52.652	2.715	
Total	561			

* Significant at .05, critical r = 1.96 df = 559

From the Table 1, the calculated t-value of 4.749 is greater than the critical t-value of 1.96 required for significance at .05 level of significance with 559 degrees of freedom, the null hypothesis is rejected. This means that, there is a significant influence of occupational status on the people attitude to solid waste disposal in Calabar Education Zone.

HO: Income level does not significantly influence the attitudes of urban dwellers towards solid waste disposal.

The hypothesis was analysed using One-Way Analysis of Variance and tested at .05 levels of significance. The result of the analysis is presented in Table 2.

TABLE 2: One-way analysis of variance (ANOVA) of the influence of income level on attitude of urban dwellers towards solid waste disposal (N=561).

Income level	**N**	Mean	SD	
Low - 1	104	51.83	2.494	
Medium - 2	270	53.10	2.552	
High - 3	187	52.62	2.738	
Total	561	52.70	2.642	
Source of Variation	SS	df	MS	f-value
Between group	122.863	2	61.432	
Within group	3786.424	558	6.786	9.053
Total	3909.287	560		

*Significant at .05, level, critical f=3.00, df=2,559

The result of analysis as presented in Table 2 reveals that the calculated f-value of 9.053 is greater than the critical f-value of 3.00 at .05 level of significance with 2 and 559 degrees of freedom. The result of analysis is significant since the calculated value is greater than the critical value. The null hypothesis is rejected. Meaning there is a significant influence of income level on the attitude of urban dwellers toward solid waste disposal in Calabar Education Zone. Since income level has a significant influence on attitude of urban dwellers towards solid waste disposal, a post hoc analysis was employed using Fishers' Least Significant Difference (LSD) multiple comparison analysis. The result of the analysis is presented in Table 3.

Table 3: Fishers' Least Significant Difference (LSD) multiple comparison analysis of the influence of income level on attitude of residents towards solid waste disposal.

(I) income	(J) income	Mean Difference (I-J)	Std. Error	Sig.
1.00	2.00	-.73122*	.34745	.036
	3.00	-.34858	.34227	.309
2.00	1.00	.73122*	.34745	.036
	3.00	.38264	.23997	.111
3.00	1.00	.34858	.34227	.309
	2.00	-.38264	.23997	.111

* The mean difference is significant at the 0.05 level

Discussion

The analysis of hypothesis one shows that there is a significant influence of occupational status on people's attitude to solid waste disposal. A possible explanation is that the perception of waste varies. To a scavenger, what the trader discards as waste, could be a great asset. Similarly, to those who are involved in industrial recycling business, waste could be a raw material for a manufactured good. Thus, attitude to waste would be influenced by the type of occupation. The finding is in line with Obidi and Adeoti (2015) who observed that number of working household members had a positive predictive impact on preference for improved waste management services.

Also, Opoko and Oluwatayo (2016) revealed that employment structure was a significant contributor towards explaining choice of waste disposal method by the respondents. Alhassan *et al*., (2017) found out that occupation type of household head was a major driver of willingness to pay for improved services. Manga *et al*., (2019) reported that employment type was a significant indicator of willingness to pay for waste management services. Ndukwe *et al*., (2019) showed that employment status was associated with very unsatisfactory waste disposal methods. Folasade *et al*., (2020) observed that occupation is a significant contributor towards choice of waste disposal method. Adekola *et al*., (2021) showed that occupation was an influential determining factor of perception and behaviour towards waste management.

However, the finding was not in agreement with Femi *et al*., (2017) who reported that occupation had no significant association with waste disposal dispositions. Also, Kaoje *et al*., (2017) showed that employment structure was not a determining factor of waste disposal practices. Ndau and Tilley (2018) reported that employment status was not a significant predictor of willingness to pay for solid waste management services. Madukwe *et al*., (2020) revealed occupation as an insignificant driver of willingness to pay for the services. Tassie and Endalew (2020) reported that occupation was an insignificant determinant of willingness to pay for the services.

The result of hypothesis two shows that there is a significant influence of income level on the attitude of the people toward solid waste disposal. A plausible explanation of the finding is that solid waste disposal, especially in the city is rarely free. Low-income earners may consequently find it expedient to seek less expensive means of disposing their waste by dumping in drainages and other unauthorised sites rather than pay for proper disposal. However, high-income earners may live in neighbourhoods where there are paid waste disposal services and, therefore, may

not hesitate to pay for proper disposal of their waste to keep their environment in sync with their economic status.

The finding agrees with that of Agunloye *et al*., (2015) who reported monthly income as a determining factor of waste disposal dispositions. Also, Daramola's (2016) finding was that monthly income was an indicator of displaying positive environmental sanitation behaviours. Igwe and Mgbasonwu (2017) revealed that monthly income level significantly predicted attitude towards waste management. Ini-mfon *et al*., (2017) observed that households' monthly expenditure level positively influenced willingness to pay. Onukogu *et al*., found out that income level was a significant factor. Tassie (2018) revealed that household monthly income was a significant predictor of willingness to pay for improved solid waste management services. Ayenew *et al*., (2019) showed that income was a key determinant of solid waste management improvement. Olukanni *et al*., (2020) revealed income level as an indicator of attitudes, practices and perceptions towards solid waste management. Omotayo *et al*.'s, (2020) finding revealed households' income as a significant driver of payments for waste and recycling behaviour adoption. Alagbe *et al*., (2021) showed that income level was indicative of waste sanitation behaviour.

Conclusion

The purpose of this study was to investigate economic-based demographic variables and attitude of urban dwellers towards solid waste disposals in Calabar Education Zone, Cross River State. The findings of this study revealed that:

1. Occupational status does significantly influence the attitude of urban dwellers towards solid waste disposal in Calabar Educational Zone, Cross River State.

Income level does significantly influence attitude of urban dwellers towards solid waste disposal in Calabar Educational Zone, Cross River State.

Recommendations

i. The government through the Ministry of Environment should provide waste bins to individuals at low cost and waste receptacles should be located near households for easy access.
ii. The government through the law enforcement agencies should discourage negative attitudes to solid waste disposal and encourage positive attitudes through the enforcement of penalties for defaulters.
iii. The government through the Ministry of Environment and the Calabar Urban Development Authority should encourage those who are gainfully employed to pay for waste disposal services.

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