



Appraisal Of People Perception On Waste Disposal And Management In Sokoto Metropolis.

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ABSTRACT

The major environmental problem to inhabitants is the dumping of solid waste on the streets and in drainages. Municipal Solid Waste (MSW) management is one of the fundamental issues in the contemporary urban areas especially in developing countries such as Nigeria. This study was conducted to appraise the People perception on waste disposal and management in Sokoto metropolis. A total of one hundred questionnaires were administered using Stratified random sampling method, residential and commercial areas was classified into different strata. Information on the designated waste collection centers and town planning information was obtained from Sokoto Environmental Protection Agency, Sokoto Urban and Regional Planning Board and ministry of land and survey. The findings revealed that Domestic waste constitutes the greater percentage amongst the sources with 60% followed by commercial with 30% and Agricultural waste with only 10%. It is evident that domestic activities with increasing number of households can lead to higher waste generation within the metropolis. A significant proportion of the resident expressed positive perception to the manner with which waste litter the whole metropolis however only very few perceived it as a serious problem. This study also revealed children involvement in the waste handling and disposal with large proportion admitting using children to dispose household waste onto the dumps and these children are largely from the household while Almajiris (children attending local Islamiyya schools) also constituted another bulk of children involved in the household waste stream management. Based on physical observation of the waste dumping sites, there are high unauthorized waste disposal points in the study area than authorized ones. Indiscriminate dumping of waste causes problems like environmental pollution, blockage of drainages, unpleasant odour, littering of the street, epidemic, ground water pollution among others. The research finally recommend that In order to improve solid waste management best practices, there is strong need for the state government to promote local community capacity through sensitization and awareness campaigns.

Keywords: People perception, Waste disposals and Management

INTRODUCTION

The Major environmental problem to inhabitants is the dumping of solid waste on the streets and in drainages. Municipal Solid Waste (MSW) management is one of the fundamental issues in the contemporary urban areas especially in developing countries such as Nigeria (Desta et al. 2014). Solid wastes are waste generated through domestic, commercial, industrial, agricultural and other social activities including institutional wastes, street sweepings and construction debris (Aliyu, 2010). Population growths in Nigerian urban centers have significantly increased the generation of wastes. Inadequate waste services have led to illegal burning and dumping of wastes on open spaces, which is degrading the environment and creates profound public health concerns.

Ogwueleka, (2009) reported that the Urban waste generation in Nigeria range from 12,000 to 255,556 tons per month with Lagos, the commercial hub in the country, generating the highest followed by Kano. It is worthy to note that Lagos and Kano are the most populous state in Nigeria by 2006 National population Census. Population growth, increasing urbanization, changes in consumption pattern, and rapid developments in technology have all contributed to an increase in demand for goods and services which lead to introduction of different products to meet up with consumer need and demand (Odum and Odum, 2006). These factors together with lack of effective recycling activities resulted in an increase in both the quantity and the variety of solid wastes generated and disposed-off as waste. The management of solid waste as important as it may disposal will affect the population's perception and willingness to participate in best waste management practices (Adekunle et al., 2012).

In Sokoto metropolis there is tenacious littering of surrounding with household waste and other construction debris in manner best described by kaoje et al. 2017 as "throw it where you like" which now resulted to piles of refuse dotting the entire metropolis. This problems need to be addressed and It was against this background the study was conducted to determine the perception on solid waste disposal method in the metropolis and to see whether the littering is related to the perception of the people of Sokoto metropolis.

Solid Waste Management Perception

The perception of one's capability is said to set a limit to what to do and ultimately what can be achieved (Holland et.al 1996). Perception influences how a person views himself and the world around him and how it tends to govern his behaviour. Dann Marie (2009) reported that residents' perception are positively correlated with solid waste management practices. This suggests that residents with positive environmental perception tend to perform responsible solid waste management which entailed waste collection and proper disposal.

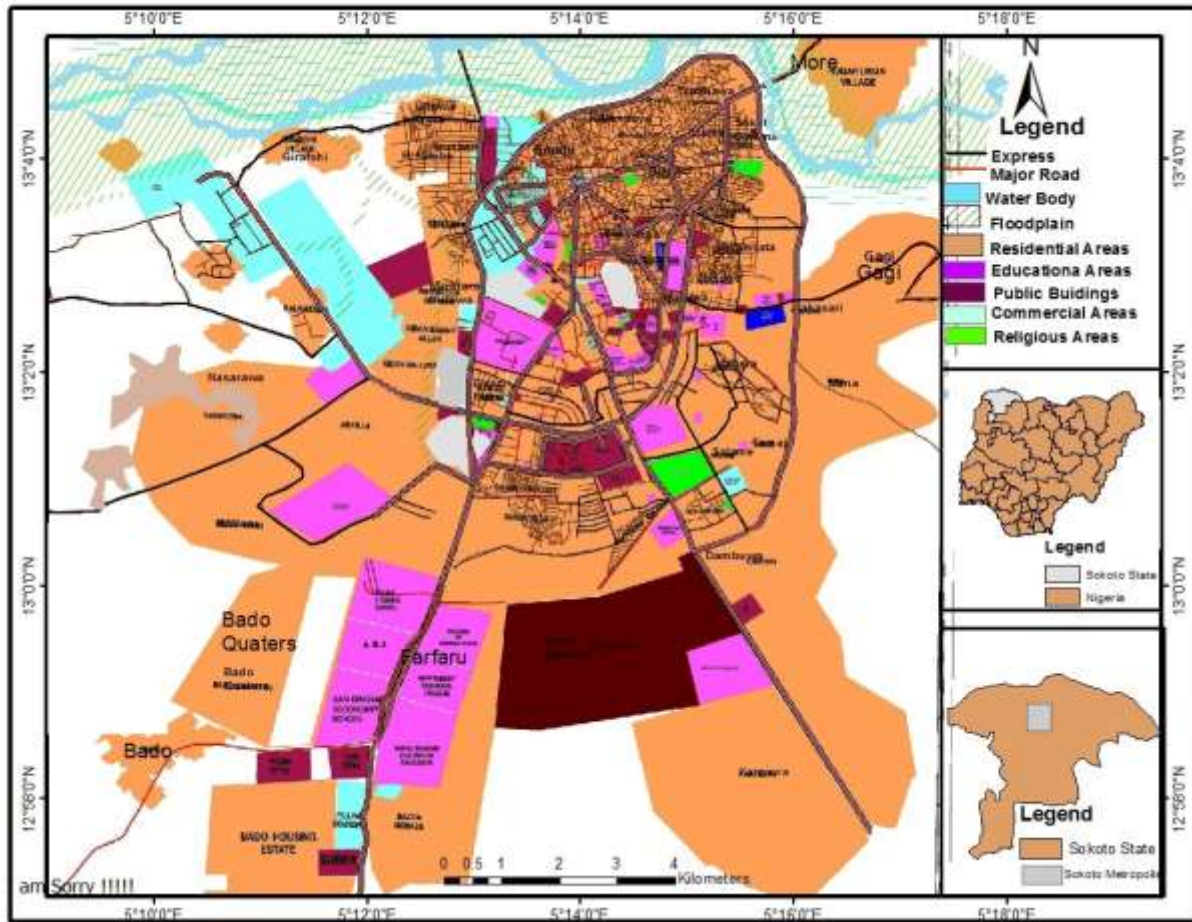
Population perception of waste management describes the whole process of how the populace comes to know what is going on regarding best practices in waste management. Awareness and enlightenment programs through information, education (formal and informal), capacity building, coupled with implementation and execution of laws and regulations on proper waste population size of 3,696,999 (2006 national population census) with the metropolis being the most populous. The people of Sokoto are mainly Hausa and Fulani; others are Yoruba, Ibo, Zabarmawa, Nupe and some other tribes from other part of the country. The people of the state are mainly Muslim but Christianity is also practiced by some other tribes in the state.

MATERIALS AND METHODS

Study area

Sokoto State is located to the extreme North-West of Nigeria, it lies between longitudes 4°8'E and 6°5'E, and latitudes 12°N and 13°58'N (Mamman, 2000). It shares boundaries with the Republic of Niger to the North, Kebbi State to the West and South-West, and Zamfara State to the East. The state covers a total land area of about 28,232.37 square kilometers.

The climate is tropical continental, with much of the rains between June to September, while the long dry season is from October and May (Ita et al., 1982). The central metropolis is covered by Sokoto North, and Sokoto South local government areas, with some parts of Kware LGA from the North, Dange Shuni from the South and Wamako LGA to the East. The total population of Sokoto metropolis was estimated at 485,483 people based on 2010 population projection with an average annual growth rate of 2.6% and with an average density of 1000 persons per Kilometer square estimated (Abdullahi, 2007).



Source: GIS Lab. Department of Geography UDUS.

Sampling Techniques

Before the commencement of this study, reconnaissance survey of the residential and commercial areas was conducted with the view to classifying the areas into different strata. Information on the designated waste collection centers and town planning information was obtained from the relevant authorities. Stratified random sampling was used in this study. The Sokoto metropolitan area is organized into different residential and commercial areas. Different residential areas are categorized based on the income level of the households, this include low, medium, and high income earners. Each residential category was considered as a stratum. Commercial areas (market and plazas) also constitute strata. Proportional allocation of strata was adopted to select 100 respondents for this study due to time and available resources.

Data Collection

This study used both primary and secondary data. The primary data contain information on the types of waste generated, methods of disposal, identification of authorized and unauthorized refuse disposal points, as well as the socio-economic information of the residents. While the secondary data were obtained from Sokoto Environmental Protection Agency, Sokoto Urban and Regional Planning Board and ministry of land and survey. Face to face interview using questionnaire that contained both open-ended and close-ended questions was also used. Research assistants were drawn from each selected stratum for study and adequately trained to ensure adequacy and accuracy of the information to be collected during the interviews. After the training, research assistants were posted to their location to administer the questionnaires.

Data Analysis

Descriptive statistics (frequencies and percentage) were used to summarize the data generated. The socio-economic information of the respondents was measured as categorical variables tested in relation to the methods and procedures of waste disposal using chi-square test of association.

The results were presented in tables and charts. Permission for community entry was granted by the District head of each of the selected location. In addition, individual consent was obtained from the participants before the questionnaires were administered.

RESULTS AND DISCUSSION

Socioeconomic Characteristics of the Respondents

Solid waste disposal is one of the major environmental problems in Sokoto metropolis

Table 1 below Present the Demographic characteristics of the respondents. The variables identified and analysed include age, gender, marital status, occupation, education level, and household size. Majority of the respondents are within 21-30 years age group, they constituted 50% of the total respondents. Followed by 31-40 years which constituted 30% of the total respondents, and no any response to those above 61 years. This shows that majority of the respondents are within the active youthful age. This is because male participate more in outdoor activities than female due to the religious and traditional background of the study area, it is difficult in the study area to get the response of female respondents especially house wives except older and mostly in the market.

Similarly, 50% of the respondents had tertiary education, they constituted 60% of the total respondents followed by secondary school education with 25% while primary and Qur’anic education recorded the least responses. Since the respondents are educated there is likelihood that they will accept modern ways of waste management whenever introduced. This result is in line with the findings of Adeyemo and Gboyesola (2013) on knowledge, attitude, and practices on waste management of people living in the university area of Ogbomosho which indicated that the respondents were knowledgeable in refuse management.

Similarly, another important factor that determines the amount of waste generation by households is the Household size. From table 1 it shows that 70% of the respondents reported to have household size of 1-10 people, 20% with 11 to 20 household size while only 10% of the total respondents have 21 to 30 household size. This result indicate that Household generation of solid waste in the metropolis will lead to more waste generation in the study area. The larger the households the more waste is generated; so also the higher the income level of individuals, the more waste they generated in their respective households.

Table 1: Socioeconomic characteristics

Age class	Frequency	Percentage (%)
15-20	2	2
21-30	50	50
31-40	30	30
41-50	18	18
51-60	0	0
Gender		
Male	90	95
Female	6	5
Marital status		
Single	50	41.7
Married	69	57.5
Divorce	1	0.8
Widow	0	0
Occupation		
Civil servant	26	21.7
Business	60	50.0
Student	34	28.3
Others	0	0
Educational attainment		
Primary	5	4.2
Secondary	30	25
Tertiary	66	55
Qur’an	19	15.8
Household size		
1-10	88	73.3
11-20	27	22.5
21-30	5	4.2

Source: field survey, 2022

Waste Generation and Management

In Table 2 below, Three (3) major sources of waste generation were identified. Domestic, Commercial and Agricultural waste. Domestic waste constitutes the greater percentage amongst the sources with 60% of the total respondents followed by commercial with 30% and Agricultural waste with only 10% of the total respondents. It is evident that domestic activities with increasing number of households can lead to higher waste generation within the metropolis. The higher proportion of the domestic waste generation compared with other sources could be due to the fact that the large portion of the study is made of residential houses. This is similar to the findings of Modebe et al. (2011) on Public Health Implication of Household Solid Waste Management in Awka, South East Nigerian

Table 2: Source of waste generation

Sources of waste generation	Frequency	Percentage
Domestic	60	60
Commercial	30	30
Agricultural	10	10
Total	100	100

Source: field survey, 2022

Table 3 identified the Different methods of waste collection, it shows that Majority of the respondents uses waste bin within their compounds for waste collection and they constitutes 82% of the total respondents. While trash bags/poly bags recorded the least responses of only 7% respondents. It is evident from table 3 that using waste bin is a common practice among the respondents within the metropolis. This is largely because majority of the respondents for this study acquired one form of education or the other and there is strong correlation between educational status of a people and waste management. Using trash bags/poly bags recorded the least responses as a means of waste collection and this could be attributed to the cost of acquiring the bags in relation to economic realities of the residents. It was observed that some of the waste bins had no cover, hence causing overflow and littering of the area. It was observed that children and housemaids do normally dispose of the waste (either in bins or trash bags) mostly in drainages and illegal dumpsites close to the area in which the house is located.

Table 3: Household waste collection

Collection medium	Frequency	Percentage (%)
Waste bin	82	82
Polybag	7	7
Refuse heap in your compound	11	11
Total	100	100

Source: field survey, 2022

Table 4 present the results of waste disposal and its methods. Daily waste disposal recorded the highest proportion of 59% of the total respondents. This might be due to the fact that the household size of the respondents is relatively large enough to accelerate per capita waste generation on daily basis. Preliminary survey suggests that four different methods of disposal are commonly adopted by the residents (Dumping waste in near- by dumpsite, dumping waste in near-by drainage, Use of private waste managers and by House help/housemaid. From the result it was observed that indiscriminate dumping of waste either at the nearby dumping site or drainages are very common practices with few individuals patronizing the services of private waste managers. This is shown in table 4 below

Table 4: Waste disposal and management by households

Frequency of disposal	Frequency	Percentage
Daily	59	59
One a week	31	31
Twice a week	10	10
Method of disposal		
Dumping in near- by dumpsite	35	35
Dumping in near-by drainage	21	21
Use of private waste managers	7	7
Use of House help/housemaid	37	37

Source: field survey, 2022

Physical observation of 90 different waste disposal points was carried out with a view to find out the efficiency of the government's effort in waste management. Majority of the places visited dispose refuse in unauthorized points they constitutes 74.4% (see table 5), this show that, unauthorized number of waste disposal points have a higher percentage among the resident areas in the metropolis. According to Medina (2002), improper handling and disposal of solid waste has contributed to the high level of mortality and morbidity witnessed in most urban cities in developing countries of the world. In addition, urban cities in developing countries face challenges in solid waste management in terms of their non-sustainability status in solid waste management.

Table 5: Status of waste disposal points

Variable	Frequency	Percentage
Authorized	33	74.4
Unauthorized	23	25.6
Total	90	100

Source: field survey, 2022

Perceptions on waste problem and handling responsibilities

Table 6 showed that 78% of the respondents feel worried on how refuse litter the metropolis while only 22% feel not worry. Similarly, 41% of the respondents have the opinion that residents are responsible for the poor sanitation while 32% said government and 4% don't know who is responsible. Also, 69 respondents which constitutes 69% of the total respondents are of the view that residents are responsible for cleaning their environment, 10% said government and 21% said it's the responsibility of both government and the residents. Large number of respondents 70% use children to dispose household refuse and majority of these children are from the household 61% while 27% were Almajiris.

Table 6. Resident opinions on waste problem and handling responsibilities.

Variables	Frequency	Percentage
Feel worried how refuse litter the metropolis		
Yes	78	78
No	22	22
Who responsible for the problem of sanitation		
Residents	41	41
LGA	32	32
State	23	23
Don't know	4	4
Whose responsibility to clean surrounding		
Residents	69	69
Government	10	10
Both	21	21
Appropriate for resident to clean own surrounding		
Yes	80	80
No	20	20
Use children to dispose household refuse		
Yes	70	70
No	30	30
What category of children		
From household	61	61
From neighbourhood	12	12
Almajiris	27	27

Source: field survey, 2022

Although a significant proportion of the resident expressed positive perception to the manner with which waste litter the whole metropolis however only very few perceived it as a serious problem. This study also revealed children involvement in the waste handling and disposal with large proportion admitting using children to dispose household waste onto the dumps and these children are largely from the household while Almajiris (children attending local Islamiyya schools) also constituted another bulk of children involved in the household waste stream management.

Relationship between Socio-economic Characteristic and Method of Waste Disposal

The relationship between socioeconomic characteristics of the respondents and Method of waste disposal was established using Chi square test of association. The result revealed that non-significant relationship exist with all the variables except educational status that shows positive relationship. This result is in line with the finding of Ibanga (2015) who reported that there is significant association between methods of disposing refuse with the educational level of the respondent.

Table 7: Chi square result

Variable	χ^2	P-Value
Gender	0.670	0.880
Age	13.360	0.343
Marital Status	2.768	0.837
Occupation	6.679	0.352
Educational Status	18.446	0.030
Household Size	6.134	0.408

Source: field survey, 2022

CONCLUSION

The study revealed that domestic waste is the major source of waste within the metropolis and majority of residence using landfill as their methods of waste disposal. Similarly, based on physical observation of the waste dumping sites, there are high unauthorized waste disposal points in the study area than authorized ones. Indiscriminate dumping of waste causes problems like environmental pollution, blockage of drainages, unpleasant odour, littering of the street, epidemic, ground water pollution among others. Majority of residents also expressed worries on the manner waste dot the metropolis, only small minority perceived it as a major problem.

RECOMMENDATIONS

- i. In order to improve solid waste management best practices, there is strong need for the state government to promote local community capacity through sensitization and awareness campaigns.
- ii. Establishment of community waste management structure.
- iii. Household should be encouraged to provide collection centres in their homes.
- iv. Support private partnership in waste collection and also organize well supervised community clean-up exercises.
- v. Laws on waste disposal should be enforced with penalties

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