

# On Some Socio-Economic Factors Affecting Household Sanitation in Ado-Ekiti, Ekiti State, Nigeria

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## Abstract

Different sanitation programmes introduced by government at various levels are ill-conceived and are abandoned prematurely due to numerous attitudinal, institutional and economic factors. This study examines the relationship of some socio-economic factors and house sanitation in Ado-Ekiti. Using simple bar chart and Chi-Square test of independence, the research reveals that though there seems to be variations among various socio-economic classes in relation to waste household sanitation technique, the relationship is found not to be statistically significant. It is therefore concluded that the general attitude of resident of Ado-Ekiti towards household sanitation and waste disposal is indifferent. Hence, the government and various non-governmental organizations involved in environmental sanitation and its impact should not relent in their effort in sensitizing the general public irrespective of their social and economic status.

**Key words:** household sanitation, social status, chi-square

## 1. Introduction

In many developing countries and indeed in Nigeria, one of the common features is that the impacts of different sanitation programmes are limited. This is usually because many of them are ill-conceived and are abandoned prematurely due to numerous attitudinal, social and economic factors. This usually results to lack of sustainability in service delivery of various programmes. Progress towards bringing about a cleaner environment has relied on various philosophies. This has involved sometimes costly measures and controversial political decisions. As a result, developing countries and financially constrained enterprises have often argued that the environment is an expensive luxury that diverts resources from more productive uses. "This perspective is giving way to a new paradigm stating that neglecting the environment can impose high economic and even financial costs, while many environmental benefits can in fact be achieved at low cost" (World Bank, 1998). Developing countries increasingly face serious environmental problems that threaten efforts to better the standard of living and usually results into worse health conditions. The incessant positive deficit in rural-urban migration which often leads to increased congestion, industrial expansion, and lack of pollution control result in unhealthy levels of pollutants in air and water. The price often paid by industrial development is environmental stress and widespread environmental damage. The relationship of humans to the environment is reciprocal since the environment has profound influence on humans and, in the same vain, humans extensively alter the environment to suit their needs and desires. Some of these changes created new hazards.

In Nigeria, for several years now, many governments (both civilian and military) have been emphasizing the need for sustained environmental sanitation. Up till today, the effects of all these are far from reality. Various efforts to ensure that the overall good sanitation practice is maintained and sustained in the country have yielded little or no result. Various researches [Ajayi et al.(2003), Goni (2006), Oteze (2006), Nwankwoala and Mmom (2008), Okeke and Uzoh (2009)] with compelling results and recommendations had been carried out in the country but all these efforts so far had been ineffective. Humans' attitudes toward the environment are still negative and are often contrary to the concept of sustainable development, which recognises that economic growth and environmental protection are inextricably linked and that the quality of present and future life rests on meeting basic human needs without destroying the environment on which all life depends. As a country, Nigeria has suffered from poor co-ordination, poor maintenance culture, lack of data/information for planning, over bearing bureaucratic control by various supervising ministries, lack of professional inputs on projects, lack of community participation, inappropriate infrastructures as well as lack of adequate quality monitoring and evaluation, lack of clear policy direction, lack of focus in terms of goals and objectives (which resulted in the country's inability to achieve full coverage of the rural population with improved sanitation services). Despite various programs by different tiers of government to address the issue of environmental sanitation, many Nigerians still have negative attitudes toward environmental sanitation and do not value personal or environmental sanitation. Despite various organisations that are now spearheading political activism and campaigns for changes in policies, laws, technologies, and development strategies to enhance environmental health qualities, the achievement is minimal.

Studies involving the worsening environmental problems of Nigerian cities in relation to the current search for a sustainable and more equitable pattern of development are essential. The rapid pace of urbanisation and the enormous scale of unmet needs are taking a heavy toll on the country's cities and urban populations, especially

the urban poor who live and work in appalling conditions that threaten their health and undermine their productivity.

## 2. Literature Review

Waste possesses a significant threat to human environment and hence, health largely due to the way it may be disposed. Although The Federal Environmental Protection Agency Act of 1988 did not define what constitute a waste, however, some states over the years have implicitly defined what constitute waste. According to Lagos State Environmental Sanitation Law of 1985, a waste is any substance which constitutes a scrap material, an effluent or other unwanted surplus substance arising from application of any process. Waste refers to all unwanted and economically unusable materials that result from human activities, discarded purposefully or accidentally into the environment (UNEP, 1994), (Gerrans, 1994) and (Van Beukering et al, 1999).

The problems of sanitation services in developing countries like Nigeria are enormous (WHO, 2010) with incidences of water-borne diseases and infections highest among the poor, especially school-aged children (WHO, 1997). (UNICEF, 2005) reported that inadequate access to sanitation services and poor hygiene practices, is the cause of at almost 20% child mortality of the total childhood disease burden globally. Water, sanitation and hygiene are also linked to school attendance and performance (particularly among girls), safety and security of women and girls, and socio- economic development of communities (UNICEF, 2006). Therefore, the importance of environmental sanitation and hygiene in schools is of direct relevance to the MDGs of achieving universal primary education, promoting gender equality and reducing child mortality, and supportive to achievement of other goals [WHO, 2010; Adam et al, 2009]

Waste management entails procedures in collecting, keeping, treating, and disposing waste in a way that it becomes harmless to living organisms (Atsegbua, 2003). It can also be seen as systematic dumping and channelling of waste through landfills or pathways to ensure that they are disposed off with regard to safeguard public health. Waste management is highly capital-intensive but most government especially in developing world devotes lesser attention to it. If not well managed in any society, waste can constitute a major cause for epidemic disease like cholera outbreak. A study by (Watson, 2005) on investigating the impact of 3,700 projects that were part of a widespread Federal initiative to improve sanitation infrastructure on U.S. Indian reservations starting in 1960 found that sanitation investment substantially reduced the cost of clean water for households, leading to sharp reductions in both waterborne gastrointestinal disease and infectious respiratory disease among Native American infants. The sanitation program was quite cost-effective, in part because improvements in the overall disease environment also reduced infectious respiratory disease among nearby white infants. The results show that sanitation investment led to a sizable and cost-effective reduction in the infant mortality rate of the targeted beneficiaries, Native Americans, and an additional, although much smaller, reduction in mortality of nearby white infants. Among problems faced in waste management in Nigeria at large is lack of trained professional waste managers and lack of effective monitoring and control.

(Tinuola and Owolabi, 2007) used data on air, water, and environmental pollution from various government's agencies and parastatals while studying "*Environmental Pollution in Ekiti State*". They reviewed the utilization of various water dams, industrial wastes and waste from household consumables. It was found that environmental pollution increases with urbanization with highest percentage in Ado-Ekiti, the state capital, posing possible health hazards to the residents.

Indiscriminate dumping of household solid wastes on streets, rivers and drainages contributes in no small measure to drainage blockage, flooded road and the spread of offensive odours and diseases (Momoh and Oladebeye, 2010) and hence contribute to environmental pollution. The issue of waste disposal and management were not problems to early man, due to the fact that there were no population explosion and technological advancement at that time. However, with the growing population at an alarming rate coupled with technological advancement over time, waste disposal and management began to constitute serious problem to human race (Olufayo and Omotosho, 2007). In urban areas, especially in the rapidly urbanizing cities like Ado-Ekiti, the problems and issues of solid waste management are of immediate importance. However, it has been discovered that most households are struggling with how to manage their waste (Momoh and Oladebeye, 2010). Waste is accumulating day-in day-out, as there is no waste management. In Ado- Ekiti, the methods of solid waste disposal as indicated by (Adebayo et al, 2006) include dumping of refuse to gutters, drains, roadside, unauthorized dumping sites and stream channels during raining season and burning of wastes on unapproved dumping sites during the dry season. The problem of waste management in Ado-Ekiti, when combined with rapid urbanization and unplanned development is expected to be of such magnitude that significant reasons exist to initiate immediate action for improvement of this appalling situation (Momoh and Oladebeye, 2010).

## 3. Background of the Study

Ado-Ekiti is the capital of Ekiti State, one of six states in south west of Nigeria. The city also serves as the headquarter of Ado Local Government. Some fifty years ago, Ado-Ekiti began to grow/expand in size and in

population beyond its peripheries and ancient gates and ramparts. In 1963, the city was the largest urban centre in present Ondo and Ekiti States and its population of 158,000 at the census of that year represented it as the most populous urban centre in Eastern Yorubaland. The 1991 population count confirmed the primacy of the city, at least in Ekiti. According to 2006 National Census, with population of about 308,626, Ado-Ekiti Local Government is the largest town in Ekiti State. Map of Ado-Ekiti township, village and farmsteads is shown in Figure 1. The creation of Ekiti State in October 1996 and the establishment of state capital at Ado-Ekiti have further enhanced the city's physical development. The phenomenal growth and development mentioned above have constituted a lot of challenges to the city. Ado-Ekiti is located in the central part of Ekiti State in Nigeria between longitudes 4° 45' to 5° 45' and latitudes 7° 15' to 8° 15'. It is a municipal local government carved out separately out of Ekiti Central Local Government in May, 1989 to put an end to incessant inter-community rivalry and political bickering between Ado-Ekiti and neighbouring communities. The town is bounded in the north and west by Irepodun/Ifelodun and Ekiti South-West local governments. In the south and east, it is bounded by Ikere and Gboyin local governments respectively. The town has long been the major commercial and industrial centre hub in Ekiti state (Adetunji and Adaraniwon, 2011).

The scope of this research is to know whether some social and economic factors are the determinants of household sanitation pattern in Ado Ekiti. The study covered Ado Ekiti metropolis and information was collected from the people of the city through the distribution of questionnaire.

## MAP OF ADO-EKITI LOCAL GOVERNMENT



Figure 1: Study area map [Courtesy Momoh and Oladebeye (2010)]

### 4. Research Methodology

#### Chi-Square Test

A chi-squared test, also referred to as chi-square test or  $\chi^2$  test, is any statistical hypothesis test in which the sampling distribution of the test statistic is a chi-squared distribution when the null hypothesis is true, or any in which this is asymptotically true, meaning that the sampling distribution (if the null hypothesis is true) can be made to approximate a chi-squared distribution as closely as desired by making the sample size large enough. The Chi Square test is undoubtedly the most important and most used member of the nonparametric family of statistical tests. Chi Square is employed to test the difference between an actual sample and another hypothetical or previously established distribution such as that which may be expected due to chance or probability. Chi Square can also be used to test differences between two or more actual samples.

### Basic Computational Equation

For  $r \times c$  contingency table with  $r$ -rows and  $c$ -columns, Chi-Square test of independence of two factors (row factor and column factor) is given as:

$$\chi^2 = \sum_{i=1}^r \sum_{j=1}^c \left( \frac{(O_{ij} - E_{ij})^2}{E_{ij}} \right)$$

where  $O_{ij}$  is the observed frequency in the  $i$ th row and  $j$ th column

$E_{ij}$  is the expected frequency in the  $i$ th row and  $j$ th column

The above statistic has chi-square distribution with  $(r-1)(c-1)$  degree of freedom.

When there is only one degree of freedom, an adjustment known as Yates correction for continuity must be employed. To use this correction, a value of 0.5 is subtracted from the absolute value (irrespective of algebraic sign) of the numerator contribution of each cell to the above basic computational formula. The basic chi square computational formula then becomes:

$$\chi^2 = \sum_{i=1}^r \sum_{j=1}^c \left( \frac{(|O_{ij} - E_{ij}| - 0.5)^2}{E_{ij}} \right)$$

### Degrees of Freedom

A value of  $\chi^2$  cannot be evaluated unless the number of degrees of freedom associated with it is known. The number of degrees of freedom associated with any  $\chi^2$  may be easily computed.

If there is one independent variable,  $df = r - 1$  where  $r$  is the number of levels of the independent variable.

If there are two independent variables,  $df = (c - 1)(r - 1)$  where  $r$  and  $c$  are the number of levels of the first and second independent variables, respectively.

### Assumptions

Even though a nonparametric statistic does not require a normally distributed population, there still are some restrictions regarding its use.

1. Representative sample (Random)
2. The data must be in frequency form (nominal data) or greater.
3. The individual observations must be independent of each other.
4. Sample size must be adequate. In a  $2 \times 2$  table, Chi Square should not be used if  $n$  is less than 20. In a larger table, no expected value should be less than 1, and not more than 20% of the variables can have expected values of less than 5.
5. Distribution basis must be decided on before the data is collected.
6. The sum of the observed frequencies must equal the sum of the expected frequencies.

When performing a chi-square test, your data must satisfy important assumptions. Although these assumptions may be stated differently in different textbooks, they generally assert that:

- 1) The sample must be randomly selected from the population.
- 2) The sample size,  $n$ , must be large enough so that the expected count in each cell is greater than or equal to 5.

## 5. Results and Discussion

### Chi-Square Test

#### Chi-Square Test of Independence

##### Hypothesis Statement 1

$H_0$ : Education Status is independent of type of toilet used

$H_1$ : Education Status is dependent of type of toilet used

**Decision Rule:** Reject  $H_0$  if P-value  $< \alpha$  (0.05)

	Value	df	P value
Pearson Chi-square	18.257	15	0.249

**Conclusion:** We do not reject  $H_0$  since P-value (0.249)  $> \alpha$  (0.05) and conclude that Education Status is independent of type of toilet used

##### Hypothesis Statement 2

$H_0$ : Education Status is independent of technique of disposing solid waste

$H_1$ : Education Status is dependent of technique of disposing solid waste

**Decision Rule:** Reject  $H_0$  if P-value  $< \alpha$  (0.05)

	Value	df	P value
Pearson Chi-square	16.059	20	0.713

**Conclusion:** We do not reject  $H_0$  since P-value (0.713) >  $\alpha$  (0.05) and conclude that Education Status is independent of technique of disposing solid waste

**Hypothesis Statement 3**

$H_0$ : Education Status is independent of how often respondents clean toilet

$H_1$ : Education Status is dependent of how often respondents clean toilet

**Decision Rule:** Reject  $H_0$  if P-value <  $\alpha$  (0.05)

	Value	df	P value
Pearson Chi-square	24.130	20	0.237

**Conclusion:** We do not reject  $H_0$  since P-value (0.237) >  $\alpha$  (0.05) and conclude that Education Status is independent of how often respondents clean toilet.

**Hypothesis Statement 4**

$H_0$ : Education Status is independent of how often respondents clean toilet

$H_1$ : Education Status is dependent of how often respondents clean toilet

**Decision Rule:** Reject  $H_0$  if P-value <  $\alpha$  (0.05)

	Value	df	P value
Pearson Chi-square	24.130	20	0.237

**Conclusion:** We do not reject  $H_0$  since P-value (0.237) >  $\alpha$  (0.05) and conclude that Education Status is independent of how often respondents clean toilet.

**Hypothesis Statement 5**

$H_0$ : Employment Status is independent of how respondent receive treatment when ill

$H_1$ : Employment Status is dependent of how respondent receive treatment when ill

**Decision Rule:** Reject  $H_0$  if P-value <  $\alpha$  (0.05)

	Value	df	P value
Pearson Chi-square	9.032	9	0.416

**Conclusion:** We do not reject  $H_0$  since P-value (0.416) >  $\alpha$  (0.05) and conclude that Employment Status is independent of how respondent receive treatment when ill.

**Hypothesis Statement 6**

$H_0$ : Employment Status is independent of technique used in cleaning toilet

$H_1$ : Employment Status is dependent of technique used in cleaning toilet

**Decision Rule:** Reject  $H_0$  if P-value <  $\alpha$  (0.05)

	Value	df	P value
Pearson Chi-square	10.344	12	0.416

**Conclusion:** We do not reject  $H_0$  since P-value (0.416) >  $\alpha$  (0.05) and conclude that Employment Status is independent of technique used in cleaning toilet.

**6. Conclusion**

On observing socio-economic factors that may influence sanitation habit in Ado-Ekiti with particular reference educational status and employment status, it was revealed that:

- Education Status is independent of type of toilet used
- Education Status is independent of technique of disposing solid waste
- Education Status is independent of how often respondents clean toilet.
- Education Status is independent of how often respondents clean toilet.
- Employment Status is independent of how respondent receive treatment when ill.
- Employment Status is independent of technique used in cleaning toilet.

**7. Recommendation**

From the analyses carried out on chi square distribution it was observed that at 5% level of significant there is no significant relationship between socio economic factors and household sanitation because all variables compared shows that there is no significant relationship between them. The information extracted from questionnaire through bar chart shows that more people use traditional pit latrines and open field system of toilet. Also from bar chart, more people have no time to clean their toilet regularly.

In spite of government efforts in providing dust bin, people still dump refuse the gutter. Based on the findings in this research, the following recommendations are made:

- Private sector should be encouraged to partake in waste management by introduction of competitive waste tendering for waste collection and disposal.
- The Waste Management Board should embark on effective enlightenment of the general public on dangers associated with waste disposal.
- Continuous public sensitization causes and prevention of water borne disease by relevant agencies is

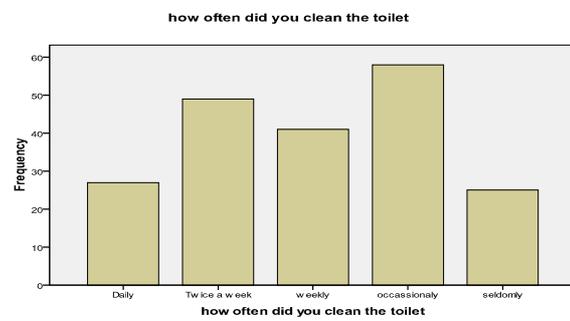
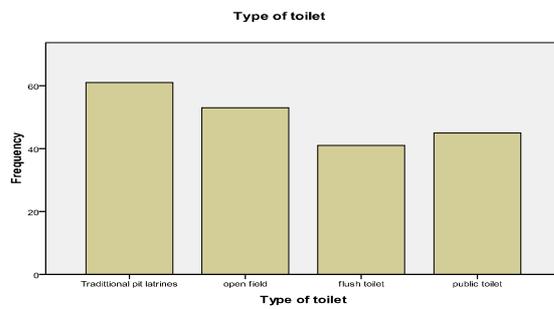
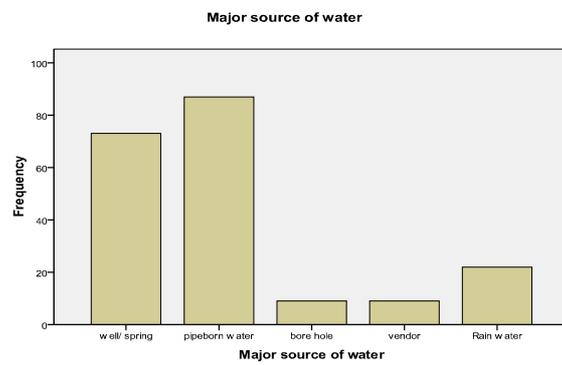
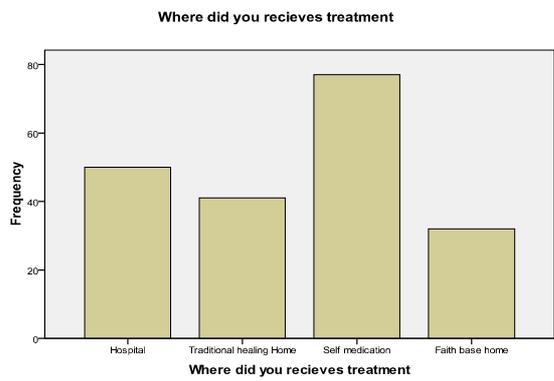
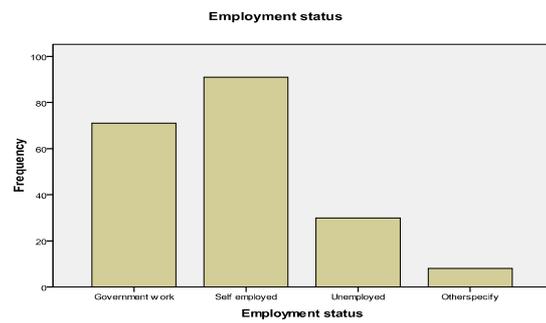
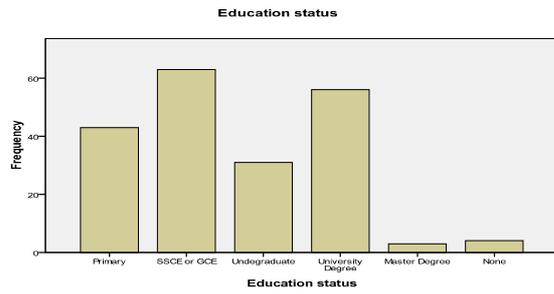
essential in both rural and urban centres.

- Government should improve fund allocation to the Ministry of Environment and other waste management agencies.
- Efforts should be made to ensure sustenance of monthly sanitation exercise and greater punishment should be meted out to offenders.
- Governments should make adequate provision for recycling facilities and infrastructure.
- Governments should introduce and enforce the laws and regulations relating to environmental management.
- Awareness on critical environment issue through enlightenment campaigns should be created in order to educate people on how to maintain clean environment.

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