# THE LEVELS OF INFANTS MORTALITY IN KADUNA STATE, NIGERIA

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## Abstract

*I*mproving child health and survival is a global priority. Infant mortality rate in Kaduna State is a major concern as the State recorded 88 deaths per 1,000 live births and 179 deaths per 1,000 live births in 2010. The aimed of this study is to analyze the rate of infant mortality levels in Kaduna State, Nigeria. The objectives were to examine the levels of infant rate from 2005-2014. Data from the hospitals in the Local Government Areas from 2005 to 2014 were analyzed to assess the levels of infant mortality. A total of 400 copies of semi structured questionnaire were administered using purposive sampling technique, of which 386 were found useful for analysis. The results shows that 23.6.2% of the respondents are between the ages of 25-29 years, 36.8% are Hausa/Fulani, 28.8% have attended Secondary school, and most of the respondents (21.8%) have monthly income between ₦30,001-₦40,000. The state recorded the highest infant mortality in 2008 and 2009. On the basis of the findings, the study recommends that programme interventions need to focus on mothers with low socioeconomic status. The adolescent girls should be encouraged to go for educational training in schools in order to lengthen age at first birth and reduce child death at first birth order. The political consideration and regional pride should be set aside when collecting data on infant mortality.

**Key words:** Infant, Levels, Mortality, Kaduna State

## Introduction

Improving child health and survival is a global priority. The latest report from the United Nations Inter-agency Group for Child Mortality Estimation (UN IGME) showed that global mortality in children younger than five years of age has declined over time (Musafili, 2015). Despite modest improvements in child health outcomes during the 20th century, infant and child mortality rates remain unacceptably high in Nigeria. Nigeria's under-five mortality rate is among the highest in the world. Addressing poor infant and child health outcomes requires scientific evidence on how best to tackle its determinants. Literature shows that knowledge about the determinants of child mortality at the individual level is insufficient to address the problem. This is because the characteristics of the household and community context where a child is born or raised tend to modify individual-level factors and therefore affect child survival. This is basically as a result of a very high child mortality rates in the region.

Although, the health outcomes of children improved dramatically worldwide during the 20th century, enormous disparities still exist between developed and developing countries. For instance, the variation in under-five mortality rates between the developing and developed nations is more than 78-fold, from a high of 180 per 1000 live births in Angola to only 2.31 per 1000 live births in Singapore (World Fact Book, 2011). Specifically in Nigeria the under-five mortality rate stood at 157 per 1000 live births, with huge variations across the various geopolitical regions (NPC and ICF Macro, 2009). Evidence from 2008 Nigeria Demographic and Health Survey shows that under-five mortality rates range between 89 per 1000 live births in the South-west, and 222 per 1000 live births in the North-East. Worse still, an increased risk of under-five mortality was reported in some regions in Nigeria (Antai 2011).

Considering the fact that infant mortality remains a major public health challenge in Nigeria and other parts of the developing world, researchers have made considerable efforts to understanding factors driving the phenomenon. A number of studies have shown that infant and child mortality rates vary by socio-economic and bio-demographic characteristics (Antai 2010; Kanjala *et al*, 2010).

These Rates of infant mortality in Kaduna South Local Government Area has been attributed to the trend in rapid population growth, down turn in the economy and a relatively high level of poverty and aparty, Ignorance, a situation of relatively unsafe drinking water, poor nutrition, inadequate sanitation, high level of environmental pollution, limited access to professional medical care, facilities and drugs as well as the low utilization of the few facilities, and high cases of unwanted pregnant among young women, most of whom are unemployed and lack a reasonable educational qualification (Partnership for Transforming Health Systems) (PATHS, 2010). As such, this study will focus on levels of infant mortality in Kaduna State.

The accurate and reliable information is insufficient and scarce on infant mortality levels in the study area. What is the level of infant mortality rate in the study area?. The aim of this paper is to analyse the levels of infant mortality rate from 2005-2014.

**Study Area**
Kaduna State is located between Latitudes 90 02'N and 110 32'N north of the equator and between Longitude 60 15'E and 80 50'E east of prime meridian (Figure 1). Kaduna State is bounded to the north by Katsina, Zamfara and Kano States, to the west by Niger State, to the east by Bauchi State and to the south by Plateau, Nasarawa and the Federal Capital Territory, Abuja.
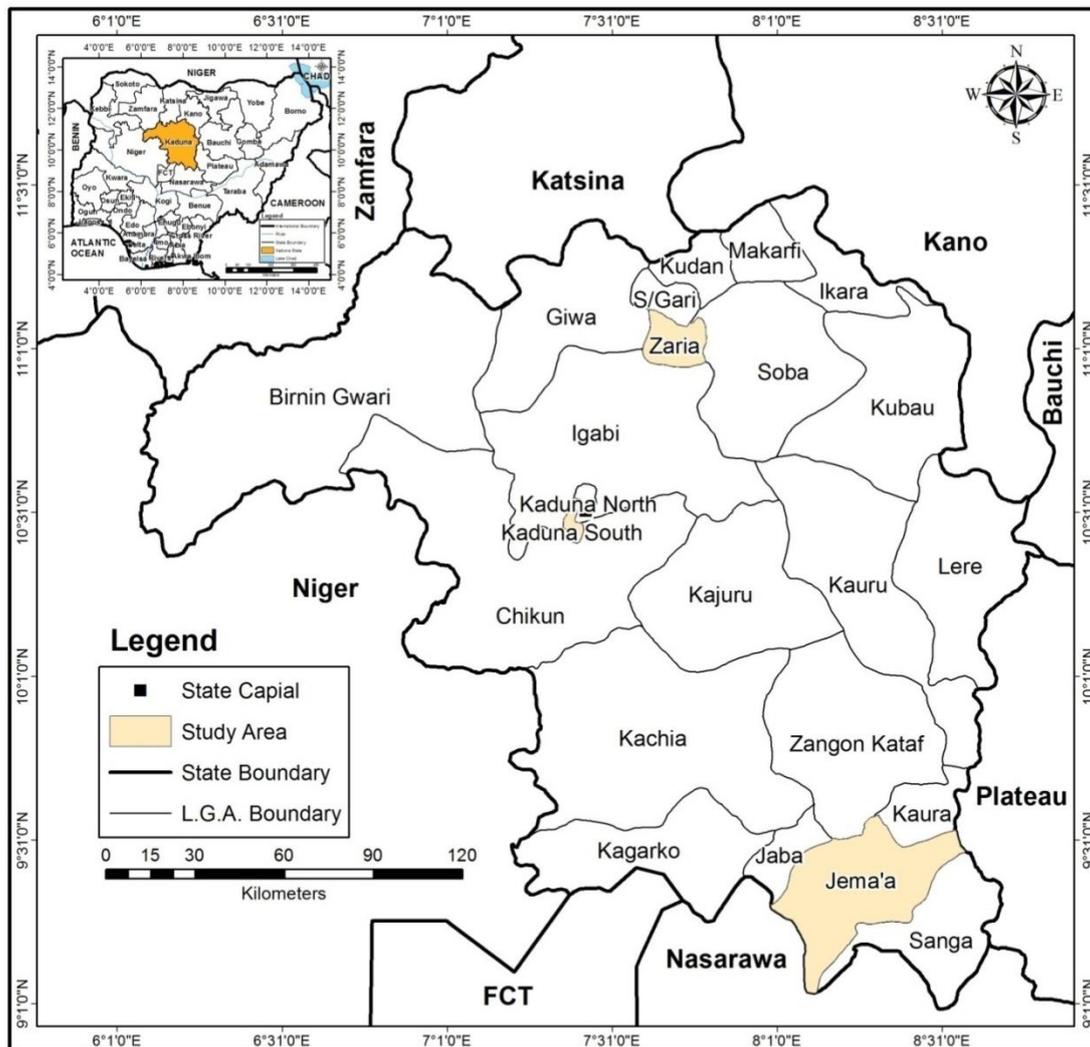
*Figure 1: Map of Kaduna State Showing the Study Areas*
*Source: Adapted from the Administrative Map of Kaduna State, 2015*

According to National Population Commission (2006) Kaduna State has a total of 6, 113,503 and a landmass area of about 43,898 square kilo meters (NPC and ICF Macro, 2009) and with a growth rate of 3.0 per annum. The state is divided into three senatorial zones, namely; Kaduna North, Central and South and it comprises twenty three (23) Local Government Areas with 255 political wards (NPC and ICF Macro, 2009). Kaduna State contains a striking range of natural environments from the forested Guinea Savanna and heavy rains in the Southern part, to the Savanna scrub in the far north (Kaduna State Ministry of Health and Economic Planning, 2009).

Kaduna State has a tropical continental climate with very marked seasonal variations. There are many primary health centers (PHC) located in virtually all the local government areas with emphasis on preventive-community health care and environmental and personal hygiene.

**Methodology**

A reconnaissance survey was carried out in order to get to identify the various locations of Hospitals in the LGAs. Primary data for this study were collected as part of a larger study on household

demography in Kaduna State. Information was collected from household of young mothers and older women that have experienced the lost of child/children (U5) who can give information about infant and child mortality in the study areas. A simple structured questionnaire was administered randomly to 386 young and older women. Secondary data were also collected in all the hospitals in the study area that have up-to date record of infant mortality.

Multi-stage Purposive sampling technique was used to select a local government area from the three senatorial districts in the study area, to ensure adequate spatial coverage of the study. Kaduna State has a population of 6, 113,503 (NPC and ICF Macro, 2009). It comprises of twenty three (23) Local Government Areas, grouped into three senatorial districts. Therefore the selected local government areas are Zaria, Kaduna South and Jema'a. The next stage was systematic sampling of wards in each of the selected LGA after arranging them alphabetically and every fourth ward selected totally nine (9) wards (see Table 1). In every of the selected ward, the households with children 5 years and below was identified with the help of a local guide who is resident in the ward.

A number of models have been developed to estimate sample size. Yamane (1967) provides a simplified formula to calculate sample size with 95% confidence level and 5% sampling error assumption.

$$n = \frac{N}{1 + N(e)^2}$$

Where,
n= Sample size
N= Population size of the selected LGAs
e= Level of significance (set at 0.05 for this study)

The study used the above formula to obtain a total of 400 respondents to be administered questionnaire. To determine the proportion of the respondents, Yamane (1967) sampling method for determining of respondents will also be used i.e.
Where:
Sample size per ward = <u>Selected LGAs Population x Sample Size</u>
                           Total Selected LGAs Population

**Table 1: Sample Size by Local Government area**

| Senatorial District | LGAs | Wards | Population (1991) | Population Projected (2014) | Sample Size |
|---|---|---|---|---|---|
| Kaduna North | Ikara<br>Kubau<br>Kudan<br>Lere<br>Makarfi<br>Sobangari<br>Soba<br>*Zaria | Angwan Fatika<br>Angwan Juma<br>Dambo<br>*Dutsen Abba<br>Gyellesu<br>Kauran Limanci<br>Kufena<br>*Kwarbai A<br>Kwarbai B<br>Kona<br>Tudun Wada<br>*Tukurtukur<br>Wuciciri | 3,788<br>4,363<br>2,479<br>2,923<br>8,832<br>3,863<br>9,407<br>5,044<br>6,472<br>7,837<br>23,674<br>11,599<br>8,151 | 7,476<br>8,611<br>4,893<br>7,742<br>17,431<br>7,624<br>18,566<br>9,955<br>12,774<br>15,467<br>46723<br>22,891<br>16,078 | 148 |
| Kaduna Central | Birningwari<br>Chikun<br>Giwa<br>Igabi<br>Kaduna north<br>Kajuru<br>*Kaduna South | Asso<br>Atuku<br>Angwan Sanusi<br>*Badiko<br>Barnawa<br>Kakuri Gwari<br>Kakuri Hausa<br>*Makera<br>Sabon Gari North<br>Sabon Gari South<br>Television<br>*Tudun Nuwapa<br>Tudun Wada North<br>Tudun Wada South<br>Tudun Wada West | 5,538<br>2,479<br>7,669<br>6,472<br>8,182<br>790<br>1,708<br>9,182<br>1,719<br>1,348<br>1,910<br>4,617<br>3,993<br>3,806<br>2,409 | 10,930<br>4,893<br>15,135<br>12,774<br>16,148<br>1,559<br>3,371<br>18,122<br>3,393<br>2,660<br>19,163<br>9,112<br>7,881<br>7,511<br>4,754 | 103 |
| Kaduna South | Jaba<br>*Jema'a<br>Kachia<br>Kagarko<br>Kaura<br>Kauru<br>Sanga<br>ZangonKataf | Barde<br>Gidan Waya<br>Godogodo<br>*Jagindi<br>Kagoma<br>Kafanchan A.<br>Kafanchan B.<br>*Koninkon<br>Maigizo<br>Takau | 1,340<br>1,719<br>27,305<br>2,479<br>12,881<br>17,019<br>23,674<br>3,788<br>1,000<br>8,936 | 2,645<br>3,393<br>53,889<br>4,893<br>25,422<br>33,589<br>46,723<br>7,476<br>1,974<br>17,636 | 149 |
| **Total** | | | **265,601** | **531,277** | **400** |

*Source: Modified from NPC, 1991*

*\* Selected LGAs and Wards*

Factor analysis using the statistical package for social science (SPSS) was used in determining the demographical variables that account for the determinants if infant and child mortality.

**Results and Discussion**

Table 2 shows the distribution of respondents by age and ethnicity. The result reveals that majority of the respondents (65 percent) are between the ages of 20-34 years, while 19 percent are in the age group of 40-49 years.

**Table 2: Age and Ethnicity of the Respondents**

| Age group | Frequency | Percentage |
|---|---|---|
| 15-19 | 24 | 6.2 |
| 20-24 | 66 | 17.1 |
| 25-29 | 91 | 23.6 |
| 30-34 | 83 | 21.5 |
| 35-39 | 27 | 7.0 |
| 40-44 | 37 | 9.6 |
| 45-49 | 36 | 9.3 |
| >50 | 22 | 5.7 |
| **Total** | **386** | **100.0** |
| **Ethnicity** | | |
| Igbo | 68 | 17.6 |
| Yoruba | 51 | 13.2 |
| Hausa/Fulani | 142 | 36.8 |
| Northern Minority | 94 | 24.4 |
| Southern Minority | 31 | 8.0 |
| **Total** | **386** | **100.0** |

**Source: Field Survey, 2015**

This pattern of age distribution is to be expected as the pattern of age distribution of women of reproductive age usually show an n-curve, indicating that population usually peaks at age 25-29. This is in conformity with NPC and ICF Macro, (2009) at the ages of 40-45, reproductive ability by female parents ground to a stop and only a few male parents may engage in further child bearing at 55-59 years of age.

The ethnicity distribution in the areas shows that over 30% are Hausa/Fulani and minority ethnic group constitutes over 30% also (see Table 2). The relatively high percentage of Hausa/Fulani populations is expected because they constitute the majority in the study area followed by the northern minority tribes.

**Education, Occupation and Income of the Respondents**

Parental education is an important factor in childhood mortality reduction; more education is associated with a lower risk of child death (Kabagenyi and Rutarewa, 2013). In this study, mothers were categorized into five educational categories; no formal education, primary education, Quranic, secondary and tertiary as shown in Table 3.

**Table 3: Distribution of Respondents According to Education and Income**

| Education | Frequency | Percentage |
|---|---|---|
| None formal education | 49 | 12.7 |
| Primary school | 75 | 19.4 |
| Quranic school | 105 | 27.2 |
| Secondary school | 111 | 28.8 |
| Tertiary institution | 46 | 11.9 |
| **Total** | **386** | **100.0** |
| **Monthly Income** | | |
| <₦10,000 | 86 | 22.3 |
| ₦10,001-₦20,000 | 47 | 12.2 |
| ₦20,001-₦30,000 | 45 | 11.7 |
| ₦30,001-₦40,000 | 84 | 21.8 |
| ₦40,001-₦50,000 | 63 | 16.3 |
| >50,001 | 27 | 7.0 |
| Do not know | 34 | 8.8 |
| **Total** | **386** | **100.0** |

**Sources: Field Survey, 2015**

This shows that most of the respondents (28.8%) have secondary school education and 12.7% had no formal education. Majority of the respondents have post-primary education (60.1%), this means that most of the respondents have formal education in the study population.

This is in consonance with reports in earlier researches that education has an implicit effect on the health of children, where health is interpreted in its broadest sense as complete physical, psychological, social, emotional, developmental and environmental well-being (Arab World Congress, 2004). Evidence from studies show that child mortality rates are higher among less educated mothers compared with mothers who have higher levels of education (Nath, Land, and Singh, 2007; Worku, 2009). The importance of maternal education is based on the fact that education increases a mother's level of knowledge and skills, thus enabling her to effectively understand and utilize available information and resources critical for child health and survival. Mother's education is an important factor in childhood mortality reduction as more education is associated with lower risk of child death. This study showed that infant and under-five children born by educated mothers have a lower mortality risk.

Table 3 again shows the distribution by monthly income. It shows that respondents who earn less than N30,000 have the highest proportion of 38.1%, while those who earn above 50,000 constitutes 7%. The high proportion of the unemployed respondents is probably responsible for the high proportions that earn less than N10, 000 per month. This invariably is tied to the level of education which is directly related to earning capacity of respondents.

**Trends of infant and child mortality**

Death of children under five is a factor that defines the well-being of a population and it is usually taken as one of the development indicators of health and socioeconomic status which indicate the quality of life of a given population, as measured by life expectancy (Bello and Joseph, 2014). Figure 1 revealed the trends of infant and child mortality. The figures indicate that there was an increased level in infant mortality in 2009 and 2008 respectively. The state recorded the highest infant mortality in 2008 due HIV/AIDS prevalence that was high in the State and also, with adverse consequences on the weak health care delivery system.

Another reason is as a result of human factor or political reasons where data can be manipulated by the hospital for selfish interest. Although, during data gathering there was inconsistent, duplicate, missing of record book or record keeping by the some of the hospitals. Many children were not immunized to low coverage, exposing them to disabilities or premature death.
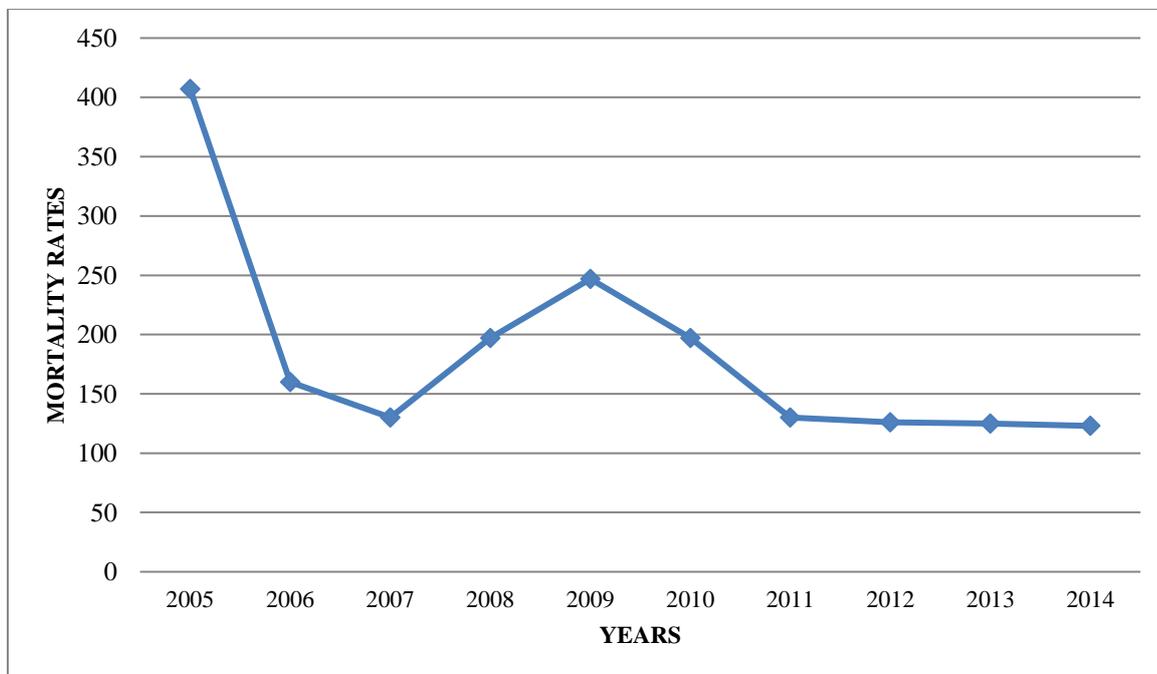


*Figure 1: Levels of Infant Mortality Rates, 2005-2014*
*Source: Hospital Records, 2005-2014*

Child survival in Nigeria is threatened by nutritional deficiencies and illnesses, particularly malaria, diarrhea diseases, acute respiratory infections (ARI), and vaccine preventable diseases (VPD), which account for the majority of morbidity and mortality in childhood (UNICEF, WHO, World Bank, UNPD, 2010). In addition to all these are childhood malnutrition, poor immunization status, household poverty, and food insecurity, while other factors includes maternal illiteracy, poor living conditions (housing, water, and sanitation), and poor home practices for childcare during illnesses. Also, the alarming rise in prevalence of HIV/AIDS among pregnant women with resultant mother-to-child transmission (MTCT) adds to the burden of child mortality and morbidity in Nigeria.

The reduction of infant mortality is a worldwide target and one of the most important key indices among Sustainable Development Goals (SDGs) in reducing infant mortality rates by two-thirds from the 1990 levels by 2015 (Desta, 2011).  Health indices are poor as can be seen in the maternal mortality ratio of 1025/1000 live births, infant mortality rates are 114 and 269/ 1000 live births respectively (FMOH, 2012). The prevalence of HIV and TB are on the increase and non communicable diseases are increasingly becoming public health problems. This, in part is because of low coverage of high impact cost-effective interventions. About 22% of children are fully immunized, less than 20% of women deliver in a health facility and only a fifth have their deliveries supervised by a trained health professional (FMOH, 2012). United Nations Children's Fund (UNICEF) has revealed that malnutrition accounts for over 50% of under-five mortality of children and women in Nigeria. The Northern part of the country (North-west) has 53% malnutrition prevalence according to 2014 Multiple Indicator Cluster Surrey (MICS). Malnutrition is another cause of morbidity and mortality in Nigeria, it accounts for at least 50% of children's deaths.

Poor environmental hygiene, low access and utilization of quality health care services by women and children are additional factors.

**Conclusion**

This study has shed light on levels of infant during the last decade. The study recommends that programme interventions need to focus on mothers with low socioeconomic status. The adolescent girls should be encouraged to go for educational training in schools in order to lengthen age at first birth and reduce child death at first birth order. The political consideration and regional pride should be set aside when collecting data on infant mortality.

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