



## Assessment of Infant Mortality Rate of Kaduna State with African Regional Standards: A Case of Ahmadu Bello University Teaching Hospital, Shika, Zaria

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### ABSTRACT

Infant mortality rate (IMR) is an internationally recognized indicator of the overall health, wellbeing and quality of life of a population. Cognizance of the sustainable development goal number 3 (SDG 3) that is to ensure healthy life for all at all age. The aim of this study was to compare the infant mortality rate of north-western Nigeria with African regional standard with established standards. The data were obtained from the existing birth and death register of 2018 from health information management department, Ahmadu Bello University Teaching Hospital (ABUTH) Shika, Zaria. IMR was calculated using conventional method and chi-square test was used to evaluate the association between survival status and sex of an infant. A total of 1120 live births and 158 deaths were recorded, yielding an IMR of 139 deaths per 1000 live births which is almost 3 times higher than the regional standard. The study further found out that the survival of an infant is independence of sex of an infant. The infant mortality rate (IMR) is greater than the regional standard, this sharp disparity indicates that some populations continue to bear the heaviest burden of infant death and further conclude that the survival of an infant is independence of sex. The findings call for government to improve access to quality health service for all and communities should participate in discussions on health issues and demand their right to health.

**Keywords:** Infant Mortality Rate (IMR), Survival Status, Sustainable Development Goals (SDGS)

### INTRODUCTION

“Health is the basic right we all have as humans”. The Infant Mortality Rate (IMR) is an internationally recognized indicator of the overall health, wellbeing and quality of life of a population. High IMR reflects the presence of unfavorable social, economic and environmental conditions. World Health Organization (WHO) defined IMR as the number of deaths under one year of age occurring among the live births in a given geographical area during a given year, per 1,000 live births occurring among the population of the given geographical area during the same year.

Roser *et al.* (2013), relate the incidence of child mortality as everyday tragedy of enormous scale that rarely makes the headlines, a comparison of this tragedy of child deaths with those tragedies that do receive public attention puts it in perspective, a large jumbo jet can carry up to 620 passengers, the number of child deaths is that of 24 jumbo jet crashes, with only children on board every single day. The world has made

remarkable progress in reducing child mortality, globally, the infant mortality rate IMR has decreased from an estimated rate of 65/1000 live birth in 1990 to 29 deaths per 1000 in 2017. Annual infant deaths have declined from 8.8 million in 1990 to 4.1 million in 2017 (WHO). Despite overall improvement in infant mortality, the risk of a child dying before completing the first year of age is highest in the WHO African region (51 per 1000 live births), over six times higher than that of WHO in European region (8/1000 live births). High variation in child mortality exists in some region. Health in childhood is one of the key predictors of health and productivity in later life.

Nigeria in the past few years has experienced some worsening of child mortality, the infant

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mortality rate evaluated at 100 per 1000 in 2003 was measured at 87 in 1990. This can be in fact explained by the persisting low numbers of births occurring in health facilities and the low number of births attended by trained healthcare service providers. In 2003, two third of the births in Nigeria still occurred at home. In addition only slightly more than one-third of births are attended by doctors, nurses, or midwives.

It is apparent through the elevated mortality rates that the lack of access to or use of quality delivery services is an issue of immense importance in Nigeria. Problems such as obtaining money for treatment, distance to health facility and having to take transport are some of the many difficulties stated by women in describing difficulty with accessing healthcare. The aforementioned lack of trained health care attended births in Nigeria is compounded by the fact that only six in ten mothers receive antenatal care from a trained medical professional.

The consequences of the poor state of pregnant women in Nigeria are numerous and affect maternal as well as child mortality. The under-five mortality ratio in Nigeria is 201 per 1000 live births meaning that one in five Nigerian children never reach the age of 5. Infant deaths, which account for half of child mortality, have increased from what they were in 1990. With a 13% immunization rate for children between 12-23 months, Nigeria is the African country with the lowest vaccination rate. Substantial presence of Acute Respiratory Infections and diarrhoea also contribute to the elevated mortality rates for children (WHO 2017).

The sustainable development goals (SDGs) are a collection of 17 global goals designed to be a blueprint to achieve a better and more sustainable future for all. Every country in the world agreed to reach the UN's Sustainable Development Goals (SDGs).

Goal 3: Good health and well-being that is "ensure healthy live and promote well-being for all at all age" Goal 3.2 is to reduce the child mortality rate to at least as low as 2.5% in all countries by 2030. This would mean that more than 97.5% of all newborns would survive the first five years of their life no matter where they are born. We are currently far away from the goal for 2030. Globally 3.9% of all children die before reaching the age of five, which means

that on average 15,000 children die every day. And the visualization shows that while the child mortality rate declined around the world there are still many countries in which the mortality rate is higher than 2.5%.

The aim of the study is to determine the infant mortality of north-western Nigeria by comparing to the African regional standard and investigate if survival is associated with sex of an infant.

## METHODOLOGY

The data were obtained from the existing birth and death register of 2018 from Health Information Management Department, Ahmadu Bello University Teaching Hospital (ABUTH) Shika, Zaria. (ABUTH) is under the Federal Ministry of Health.

### The Infant Mortality Rate

The infant mortality rate is the number of deaths under one year of age occurring among the live births in a given geographical area during a given year, per 1,000 live births occurring among the population of the given geographical area during the same year, mathematically written as:

$$IMR = \frac{\text{No. of death of Children < 1 year of age in a year}}{\text{Total live birth during that year}} * 1000$$

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### Chi-square Test

$$\chi^2 = \sum_{i=0}^n \sum_{j=0}^k \frac{(o_{ij} - e_{ij})^2}{e_{ij}}$$

Where  $o_{ij}$  is the observed value and  $e_{ij}$  is the expected value.

### Ethical Clearance

This study had approval from the health research ethics committee of Ahmadu Bello University Teaching Hospital (ABUTH )Shika, Zaria, Nigeria. The objectives were stated in the proposal which was approved by the ethical review committee. To maintain confidentiality,

data containing personal identifiers of subject are not shared to third party.

**Data Management and Analysis**

Table 1 observation cross tabulation

		Observations		Total
		Alive	Die	
Male	Count	487.0	78.0	565.0
	Expected count	486.3	78.7	565.0
Female	Count	477.0	78.0	555.0
	Expected count	477.7	77.3	555.0
Total	Count	964.0	156.0	1120.0
	Expected count	964.0	156.0	1120.0

Table 2 Chi-square Calculations

	Value	Degree of freedom (DF)	Asymptotic signific (2 sided)	Exact sig. (2 sided)	Exact sig. (1-sided)
Pearson Chi-Square	0.014 <sup>a</sup>	1	0.904		
Continuity Correction <sup>b</sup>	0.001	1	0.973		
Likelihood Ratio	0.014	1	0.904		
Fishers Exact Test	0.014	1		0.931	0.486
Linear-By-Linear Association	0.014	1	0.904		
Number of Valid Cases	1120	1			

**Interpretation**

- a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 77.30.
- b. Computed only for a 2x2 table.

Since P-value for Pearson chi-square is greater than the level of significance, that is, (0.904 >0.05) we therefore do not reject H<sub>0</sub> in other words, survival status is independence of sex at 5% level of significance

**RESULTS**

A total of 1120 live births and 158 deaths were recorded, yielding an IMR of 139 deaths per 1000 live births which is almost 3 times higher than the regional standard.

The result shows an IMR which is greater than the regional estimates (51death /1000 live birth). Because infant mortality is a measure of the overall health and wellbeing of a state, Zaria’s sharp disparities in infant mortality indicate that

some populations continue to bear the heaviest burden of infant deaths. This study further found out that the survival the survival of an infant is independence of sex.

**DISCUSSION**

The IMR in the present study was greater than regional estimate. According to WHO the regional estimate (sub-Saharan Africa) is 51 deaths per 1000 live birth, IMR in Zaria (where the study was carried out) is estimated to be 139death per 1000 live birth which is almost 3 times at higher risk of death than those in sub-Saharan Africa. The study further found out that the survival of an infant is independence of sex. Hence the study recommended that government to provide equitable access to quality health service for all, Communities should demand their right to health and call for the urgent need to push for inculcate the practice of transparency, accountability and better planning to strengthen health systems.

**Conclusion**

The result shows an IMR which is greater than the regional estimates (81death /1000 live birth). Because infant mortality is a measure of the overall health and wellbeing of a state, Zaria’s sharp disparities in infant mortality indicate that some populations continue to bear the heaviest burden of infant deaths. This study further found out that the survival of an infant is independence of sex. Hence the study recommended that government should improve equitable access to quality health service for all, Communities should self-organized, participate in discussions on health issues and demand their right to health, there is also the urgent need to push for inculcate the practice of transparency, accountability and better planning to strengthen health systems.

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