

## MATERNAL AGE AT BIRTH AND UNDER-5 MORTALITY IN NIGERIA

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### Abstract

**Objective:** The paper examined the impact of maternal age at birth on under-5 death in Nigeria.

**Method:** Secondary data were generated from the 2003 Nigeria Demographic and Health Surveys in examining the relationship between maternal age at birth and under-5 mortality risk. Relationships between variables were tested through bivariate and logistic analyses.

**Results:** Out of 7620 sampled women for the study, almost 60% were less than 30 years old, the median age was 26 years- a youthful population. Analyses of the data revealed a high under-5 mortality rate (45.4%), a general high home delivery (62.4%) among Nigerian women, which dictates a low rate at which assistance by health professional is being sought during childbirth. Furthermore, mothers' median age at first birth was less than 19, while under-5 death was significantly pronounced among younger (less than 20 years) mothers and older women (above 35 years) ( $p < 0.05$ ). Maternal education which was significantly low among younger mothers was a predictor of under-5 mortality.

**Conclusion:** Under -5 mortality is still high especially among younger mothers. Thus resolving this challenge in Nigeria will be inadequate if early childbearing issues are not addressed using a tailored framework alongside with the need to improve maternal education in Nigeria.

**Key Words:** Mortality, nested, childhood, exposure, infancy

### Introduction

Under-5 mortality rate is a leading indicator of the level of child health and overall development in any country; also it is one of the Millennium Development Goals' (MDGs) indicators of developmental level (1,2). Despite underreporting of death statistics in less developed countries, sub-Saharan Africa countries have witnessed some reductions in childhood mortality in the last three decades but the trend and the current rate is still not impressive.

The state of the world's children report indicated that about 12.9 million children die every year in developing countries (3), while apart from other killer diseases that they are vulnerable to, the World Health Organization's report indicates an average of five episodes of diarrhea per year in a child resulting to about 800,000 annual deaths among children within the sub-continent (4). Out of the thirty countries with the world's highest child mortality rates, twenty-seven are in sub-Saharan Africa (5). To achieve the two-third reduction in child mortality by 2015 as set and targeted by MDGs, the sub-continent has to put in more serious efforts with respect to programmes and policies aimed at reducing infant and under-5 morbidity and mortality.

Nigeria has one of the highest infant and child mortality rates in the world. This is besides the high rate of poverty especially among the rural dwellers of which women and children are the most affected. Considering the position of the country and its population stand, it is obvious that achieving 75% reduction in child mortality worldwide by 2015 will not be feasible without taking into consideration a resounding reduction in infant and child mortality in Nigeria.

Over the years, Nigeria has witnessed a high trend of childhood mortality due mainly to infectious and parasitic but preventable diseases, with diarrhea, malaria, acute respiratory infections and measles taking the lead (4,6-12).

For instance, compared to the minimum goal of 70 per 1000 internationally adopted at the 1990 World Summit for Children, it was reported that 87 out of every 1000 infants born in Nigeria die before their first birthday (10) and 115 of every 1000 children die before reaching age five (11). The little but unimpressive reduction in childhood mortality brought about 75 deaths per 1000 live births in 1999, while 140 deaths per 1000 live births was recorded for the 1995-1999 period (12). The infant mortality for the 1999-2003 periods was estimated to be 100 per 1000 live births (1).

It has been observed that national and international disease-oriented programmes and policies were not effective in solving the high rate of childhood mortality. However, maternal, environmental, behavioural and other biosocio/economic factors (13) among other several individual- and household-level factors were also recognized as important determinants of infant survival. Maternal education and the pace of childbearing were also identified as key determinants of infant and child survival (14-16). Other studies also revealed the importance of environmental or geographic factors (15) and urban residence (17-18) in determining child survival. Furthermore a correlation between poverty and poor health, malnutrition and reduced infant and child survival has also been confirmed (13).

### Maternal age at first birth

Manda in Malawi and Balk attested that mother's age at first birth and the birth order effects are both important in determining mortality risks in infancy (16,19). The primary objective of this paper is to examine the likely effects of maternal age at first birth on child survival in Nigeria. Despite the reality of avoidable maternal deaths in many instances, little evidence is available in the Nigerian context on proximate factors stimulating high maternal deaths of which maternal age at first birth is a factor. Teenage motherhood otherwise known as early childbirth (birth by a woman before such woman's 20<sup>th</sup> birthday) remains a pressing social issue and public health problem world-over.

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Evidence has shown that teenage mothers are more likely than older mothers to have children with behavioural and health problems, academic difficulties and developmental delays (20-21) mild mental retardation (22); similarly, the Alan Guttmacher Institute also reported that apart from high school drop out, low self-esteem, low employment opportunities and lower productivity exposed to by teenage mothers, they are equally at higher risk of impairing their health and that of the products of such pregnancies which at times results in death (23).

**Data and Methods:**

Secondary data were generated from the 2003 Nigeria Demographic and Health Surveys (NDHS) in examining the relationship between maternal age at birth and mortality risk through the first 5 years of life. The NDHS survey is a rich nationally representative database. Sequel to the aim of designing measure for the levels, patterns, and trends of demographic and health indicators, it provides up-to-date information on the population as well as health situation. Specifically, NDHS questionnaire collected information on the maternal, child and household health, individual birth history and childhood mortality, among others. To have a nationwide coverage, NDHS 2003 systematically selected 7,864 households (including 7620 women aged 15-49 years and 6029 children less than 5 years) across the 6 geo-political zones in Nigeria. The NDHS 2003 selection ranges within 12.3% in Southern south and 23.5% in the Northern west. Other detailed description of the sampling methodologies can be found in the various NDHS final reports.

The analysis of the hypothesized relationship between under-5 mortality risks and maternal age at birth was based on both bivariate analysis and logistic regression. Pearson’s chi-square  $\chi^2$  was used to test the significances of the existing relationships between variables. While controlling for other important factors, a 3 model logistic regression analysis was applied in examining the net effects of the socio-demographic factors.

**Hypothesis**

Children born by mothers (less than 20 and above 35 years) stand a higher risk of dying than those by normal adult mothers (20-35 years). (The mothers have little knowledge of child health care, less educated, low family income, live in slum and rural areas, receive less immunization, not physiological and psychological mature, etc)

**Results:**

**Socio-economic and demographic profile of the respondents.**

Background characteristics of respondents showed a youthful population with 60% of the population less than 30 years (median age = 26 years). Close to 4 in every 10 women had secondary school education or more; about 64%

of the population were in monogamous marital union. Examination of occupational status revealed that about 56% were engaged in productive work. Early sexual initiation is often considered undesirable, as it increases the length of exposure to the risk of pregnancy, child bearing and STD infection. The study revealed 64.3% prevalence rate of early childbirth with 18.6years as mean age at first birth. Information on respondent’s place of residence shows that at least 60% of women lived in urban areas than the rural areas in Nigeria. Considering age at first birth, Table 1 revealed the overall prevalence rate of under-5 deaths was 45.4%. The occurrence was significantly more pronounced among younger (less than 20 years) mothers and older women (above 35 years) who still gave birth (52% and 43% respectively) than women of ages 20 through 35 years (33.7%) (Table 1).

Table 1: Prevalence of under-5 deaths by age at first birth in Nigeria.

Variable (categories)	Under-5 death			significance test
	No	Yes	Total	
Age at first birth				
< 20 years		1580(48.1)	1707(51.9)	3287 $\chi^2=157.23$ ; P=0.000
20-35 years	1205(66.3)		612(33.7)	1817
> 35 years	04(57.1)		03(42.9)	07
Total	2789(54.6)		2322(45.4)	5111

Table 2 Prevalence and other determinants of infant/child mortality among women in Nigeria

Variables (categories)	Under-5 death			Significance test
	Total	No.	%	
Maternal Education				
None	3005	1494	49.7	$\chi^2=1088.07$ ; P=0.000
Primary	1666	522	31.3	
Secondary	2462	258	10.5	
Post secondary	487	48	9.9	
Type of residence				
Rural	3057	738	24.1	$\chi^2=96.58$ ; P=0.000
Urban	4563	1584	34.7	
Place of delivery				
Home	2348	1235	52.6	$\chi^2=198.18$ ; P=0.000
Government hospital		790	24.3	
Private hospital		596	16.5	
Others		30	0.6	
Antenatal visit				
Yes	2412	897	37.2	$\chi^2=126.48$ ; P=0.000
No	1264	715	56.6	
Assistance by Doctor				
Yes	295	74	25.1	$\chi^2=45.63$ ; P=0.000
No	3466	1574	45.4	
Given Oral rehydration				
Yes	146	63	43.2	$\chi^2=1.84$ ; P=0.398
No	596	292	49.0	
Don't know	07	04	57.1	
Type of bednet				
No bednet	3179	1229	38.7	$\chi^2=1.24$ ; P=0.539
Treated bednet	40	174	2.5	
Untreated bednet	157	67	42.7	
Source of drinking water				
Pipe	1354	335	24.7	$\chi^2=41.55$ ; P=0.000
Well water	3737	1245	33.3	
Vendor/bottled water	541	138	25.5	
Others	1988	604	30.4	
Ever completed vaccination				
Yes	1805	720	39.9	$\chi^2=7.12$ ; P=0.008
No	943	426	45.2	

Occurrence of under-5 deaths varies significantly with maternal education. The more education a woman has, the less the likelihood of under-5 death to be recorded by such woman. Occurrence of under-5 deaths was significantly more frequent among women from rural residence, in those who delivered at home, those who never gave birth with a medical doctor's assistance (Table 2). It was equally observed in the Table 2 that the incidence of under-5 death was significantly higher among women who never completed vaccination for their children, in those who never attended antenatal clinic and those whose main source of drinking water was well water.

Estimation of a series of nested logistic models was presented in Table 3 in order to establish the links within variables. The nested multivariate relationship shows that maternal education had a significant negative association with the risk of under-5 death at every model (that is, after controlling for all other variables). Children whose mothers lived in urban areas were significantly 1Z% less likely to die as a child (under-5) when maternal education and antenatal visit were controlled for (Table 3).

Table 3: Odds ratios (Logistic regression models) of under-5 deaths (probability of under-5 deaths) by demographic and socio-economic variables.

Variables (categories)	Model 1	Model 2	Model 3
<b>Maternal Education</b>			
None (RC)	1.00	1.00	1.00
Primary	0.68***	0.50***	0.58**
Secondary	0.31***	0.24***	0.30***
Post secondary	0.20***	0.23**	0.00
<b>Type of residence</b>			
Urban	0.83**	0.86	0.87
Rural (RC)	1.00	1.00	1.00
<b>Antenatal visit</b>			
No	1.36***	1.27	1.38
Yes (RC)	1.00	1.00	1.00
<b>Delivery assistance by Doctor</b>			
No	1.27*	2.22	
Yes (RC)	1.00	1.00	
<b>Age at first birth</b>			
< 20 years	1.62	1.54	
20-35 years	0.90	0.86	
> 35 years (RC)	1.00	1.00	
<b>Given Oral rehydration</b>			
No	0.85	0.78	
Yes	0.90	0.86	
Don't know (RC)	1.00	1.00	
<b>Ever completed vaccination</b>			
No	0.84		
Yes (RC)	-	1.00	
<b>Source of drinking water</b>			
Pipe	-	1.42	
Well water	-	1.37	
Vendor/bottled water	-	-	1.56
Others (RC)	-	1.00	
<b>Type of bednet</b>			
No bednet	-	0.84	
Treated bednet	-	0.51	
Untreated bednet (RC)	-	1.00	
-2log likelihood	4729.890	945.911	781.043
Chi-square (df)	310.409 (5)	67.933 (9)	45.021 (15)
Sig.	0.01	0.00	0.02

RC means Reference Category

-n.a means Not applicable

\* significant at p < 0.10

- \*\*significant at p < 0.05

\*\*\*significant at p < 0.01

## Discussion:

Reductions in childhood mortality in some sub-Saharan Africa countries have been witnessed in recent times, but the trend and the current rate is still not impressive. In spite of all efforts to combat high under-5 death in developing countries, infant and child mortality are still much higher in sub-Saharan Africa than in other developing nations. In Nigeria for instance, infant mortality of 100 per 1000 live births for the 1999-2003 period (1) indicates a precarious situation. Weak health systems performance have contributed to the undesirable high infant and maternal mortality in Nigeria, however, the socio-economic and behavioural characteristics of child bearing mothers may have also contributed to this development (27-28).

Age at first birth remains a pressing issue and public health problem because of the negative implications associated with the product of teenage pregnancy. Considering age at first birth as reported by previous studies, a similar rate was also observed in this study as 45.4% prevalence rate of under-5 deaths was recorded in Nigeria under the period reviewed. The occurrence was significantly more pronounced among younger (less than 20 years) mothers and older women (above 35 years) who still gave birth (52% and 43% respectively) than women of ages 20 through 35 years (33.7%) (24-26).

Previous studies have shown that the risk of under-5 death is higher among women with lower education (primary or less), women who reside in rural areas because of non availability of proper medical attention as well as women that never attended antenatal care (27-28). In this study it was also observed that maternal education and antenatal visitation were important and significant predictors of childhood survival. In general, the results show that the risk of under-5 death in 1999-2003 reference periods was significantly higher among women with no education followed by those with primary education and the trend continued reducing as education increases among women (50%, 31.3%, 11% and 10% respectively).

Despite the variation found in under-5 death when age at first birth was considered, it was discovered in the results that maternal education at birth was the only significant predictor of childhood survival. A likely explanation for this may be found in the beliefs and health-seeking behaviour patterns of child bearing women. Previous studies have earlier confirmed the influence of social-economic factors in health-seeking behaviour of child bearing mothers one of such factors is the influence of education and mothers ability to take appropriate actions and decisions when necessary (1,27-28). Some studies have suggested the introduction of reproductive health component into school health education programme as a way out of the problem of under mortality in Nigeria; however, more emphasis and encouragement should be placed on female education. Such efforts would further ensure a minimum level of education for the girl-child in Nigeria and help in reducing under-5 mortality in the country.

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