Extended Abstract

Abstract

Background: Health-care facilities are unevenly distributed in Nigeria as in several other sub-Saharan African countries. Meanwhile, accessibility to health facilities is crucial to the attainment of Millennium Development Goal 4 (reducing childhood mortality). This study, however aims at examining the implication of difficult access to health-care facilities (due to long distance) on childhood mortality in Nigeria.
Methods: We analysed data from a nationally representative sample drawn from 18,028 women age 15-49 that had a total of 28,647 live births within the five years preceding the survey in the 2008 Nigeria Demographic and Health Survey. The risk of death in children below age five was estimated using logistic regression analysis and results are presented as odds ratio with 95% confidence intervals. In term of exposures, distance to health care-facility was used as the main explanatory variable; while controlling for the effect of other important socio-economic and demographic characteristics.
Results: The study established a significant relationship between distance to health-care facility and under-five mortality ($p<0.05$). For instance, respondents who did not deliver in the health facility due to long distance were more likely to report higher under-five mortality compared to respondents who were living close to health facility ($p<0.05$).
Conclusion: The findings of this study stressed the need for easy accessibility to health-care facilities in order to place Nigeria back on track towards the attainment of Millennium Development Goal 4.

Background/Significance

In spite of the universal decline in childhood mortality in the last century, under-five mortality still remains a major public health challenge in many parts of the developing world. Sub-Saharan African countries in particular are falling short of Millennium Development Goal targets. The fourth Millennium Development Goal (MDG 4) of the United Nations (2000) is to reduce the under-five mortality rates of the year 1990 by two-thirds by the year 2015. As 2015 draws near a summit of the African Union in July 2010 adopted decisions to undertake actions aimed at attaining MDG4 in the continent (African Union, 2010). But Lykens and colleagues (2009) had earlier established that during the 2000-2006 period, under-five mortality rates have only been reduced from 167 per 1000 to 157 in sub-Saharan Africa, and that 27 nations in the region are reported to have made no progress towards achieving MDG4. While many countries in East Asia, Pacific, Latin America and the Caribbean are said to be on track to meeting MDG 4, sub-Saharan Africa is reportedly making insufficient progress (Shabani et al, 2010). In order to achieve MDG 4, many of the sub-Saharan African countries would have to see a 9 per cent annual reduction in under-five mortality rates (Lykens et al, 2009).

Specifically, under-five mortality rate in Nigeria is very alarming and the rate is among the highest in the world. About 1 in every 5 children born in the country dies before the age of five (NPC and ICF Macro, 2009). Besides, the country is culturally and religiously diverse and under-five mortality rates vary substantially by geo-political zones. For instance, under-five mortality rate ranges from 89 deaths per 1000 live births in the South-west to 222 per 1000 live births in the North-east. Also, Nigeria is not making sufficient progress towards the attainment of MDG4. For instance, under-five mortality rate in the country for the 1999-2003 period was 201 per 1000 live births, while the rate has marginally declined to 157 per 1000

live births during the 2004-2008 period (NPC & ORC Macro, 2004; NPC & ICF Macro, 2009).

Considering the fact that under-five mortality remains a major public health challenge in Nigeria and other parts of the developing world, researchers have devoted considerable efforts to understanding factors driving the phenomenon. A number of studies have shown that under-five mortality rates vary by socio-economic and bio-demographic characteristics. For instance, women with low or no education, (Kanjala et al, 2010; Schell 2007; Griffiths et al., 2003; Sastry 1996); women in lower wealth quintile (Harttgen & Misselhorn, 2006; Wang, 2003); women who reside in rural areas (Wang, 2003); women in polygynous unions (Omariba and Boyle, 2007); women who have poor or no access to electricity (Wang L, 2003); women who delay initiation of breastfeeding (Harttgen and Misselhorn 2006); and women who did not complete child immunization (Wang, 2006) tend to have higher infant and child mortality.

Although, studies have established the importance of access to health-care facility in addressing poor health outcomes (e.g. Orubuloye and Caldwell 1975, Becker et al, 1993; Muller, 1998; Noorali et al, 1999, Bloom et al, 1999; Babar et al, 2004, Noor et al, 2006); evidence is sparse on the effect of access to health-care facility on under-five mortality in Nigeria. Health-care facilities are unevenly distributed in Nigeria; whereas accessibility to health-care facilities is crucial to the attainment of MDG4. It is against this background that this study seeks to examine the implication of difficult access to health-care facilities on under-five mortality in Nigeria.

Data and Method

Population-based cross-sectional data from 2008 Nigeria Demographic and Health Survey (2008 NDHS) were used in this study. The survey elicited information on demographic and health indicators at the national, regional and states levels from a nationally representative sample of 36,800 households across the country. The primary sampling unit (PSU) which was regarded as a cluster for the 2008 NDHS is defined on the basis of Enumeration Areas (EAs). Sample for the survey was selected using stratified two-stage cluster design consisting of 888 clusters (NPC and ICF, 2009). Data were collected by face-to-face interviews from 33,385 women aged 15-49 women and 15,486 men aged 15-59. Out of the survey's complete sample size of 33,385 women, the sample size for this study comprises 18,028 women who had a total of 28,647 live births within the five years preceding the survey. Thus, analysis is restricted to the birth history of 18,028 women who had a total of 28,647 live-born children in five years before the survey. Birth history data including child's sex, month and year of birth as well as information on child's survivorship status were elicited for each of the live births. A detailed report of methods used in the 2008 NDHS is available elsewhere (NPC & ICF Macro, 2009).

Preliminary results

The Table below presents the results of logistic regression models assessing the relationship between 'distance to health facility' and the risk of under-five mortality; while controlling for the effect of some selected socio-economic and demographic characteristics. In all, four binary logistic models were fitted. Model 1 includes distance to health facility (main explanatory variable). Model 2 includes facility variable and selected background variables. Model 3 includes facility variable and selected mother-level variables, while model 4 is the full model comprising all variables in models 1 to 3.

The results revealed that there is a significant relationship between distance to health facility and under-5 mortality ($p<0.05$). For instance, the odds of risk of under-5 mortality decreased by 8% among women who reported that distance to health facility was not a problem (OR=0.92, $p<0.05$). Meanwhile, controlling for some variables in models 2 through 4, the odds of under-5 mortality risks became insignificant. Relative to women less than 25 years, women aged 25 years or more were 17% and 28% less likely to report under-5 mortality in Models 2 and 4 respectively. Evidence of significant effect of place of residence on under-5 mortality can be observed. Expectedly, the odds of risks of under-5 mortality increased by 20% and 24% among rural women compared to urban women in Model 2 and 4, respectively. Women with secondary or higher education were less likely to report under-5 mortality (OR=0.85). In Model 4, the odds of experiencing under-5 mortality increased by 6%. In Models 3 and 4, Women in high wealth index category were 0.78 and 0.79 times as likely as those in low wealth index category to report under-5 death. Among different regions, women from North-West were 1.17 times, North-East (1.21), and women from South-East were 1.65 times as likely as those in reference category to report risk of under-5 death. In the full model, women from the South-East region remain the only estimate significantly predicting under-5 mortality, with respect to region of residence. The odds of reporting death of under-5 children decreased significantly by 29% among women from Yoruba tribe compared to Hausa/Fulani/Kanuri women. Intriguingly, women with older partners reported higher odds of experiencing under-5 mortality compared to those in the reference category in Models 3 and 4.

In models 3 and 4 again, female children were significantly less likely to experience death before age 5 years (OR=0.86, $p<0.001$). Relative to women with birth order 1-4, women with higher birth order were 1.45 times and 1.44 times more likely to experience under-5 mortality in models 3 and 4, respectively. Women with birth interval of more than 24 months were less likely to experience under-5 mortality compared to women with shorter birth interval. The odds of experiencing under-5 mortality decreased significantly by 16% among women with higher age at first birth compared to those in the reference category.

Conclusion

The findings of this study stressed the need for easy accessibility to health-care facilities in order to place Nigeria back on track towards the attainment of Millennium Development Goal 4. Results suggest the need for interventions to increase accessibility to health-care services for women who live in the country's disadvantaged zones.

TABLE: Estimates Predicting Under-5 Mortality among Nigerian Women

Variables	Model 1	Model 2	Model 3	Model 4
Distance to health facility				
Big problem	RC	RC	RC	RC
Not a big problem	0.92*	1.05	0.94	1.05
Age of respondents				
Less than 25 years		RC		RC
25 year or more		0.83**		0.72***
Place of residence				
Urban		RC		RC
Rural		1.20**		1.24***
Educational level				
Primary or less		RC		RC
Secondary or higher		0.85*		0.91
Employment status				
Not working		RC		RC
Working		1.02		1.04
Wealth index				
Low		RC		RC
Medium		0.94		0.93
High		0.78**		0.79**
Religious affiliation				
Muslim		RC		RC
Catholic/other Christians		0.97		0.99
Traditionalists		0.91		0.90
Region				
North Central		RC		RC
North West		1.17*		1.11
North East		1.21*		1.16
South East		1.65**		1.49*
South South		1.11		1.03
South West		0.98		0.98
Ethnicity				
Hausa/Fulani/Kanuri		RC		RC
Igbo		0.81		0.76
Yoruba		0.71**		0.79
Others		1.04		1.05
Age				
Less than 30		RC		RC
31-44 years		1.10		1.05
45 or more years		1.28***		1.18*
Educational level				
Primary or less		RC		RC
Secondary or higher		0.94		0.97
Occupation				
Not working		RC		RC
Working		1.07		1.04
Sex of child				
Male			RC	
Female			0.86***	0.86***
Birth order				
1-4			RC	RC
5 or more			1.45***	1.44***
Birth interval				
Less than 24 months			RC	RC
More than 24 moths			0.20***	1.95***
Age at 1st birth				
Less than 19 years			RC	RC
19 or more years			0.84***	1.02

***p-value <0.05, **p-value <0.01, ***p-value <0.001**