

INFANT MORTALITY AND MOTHERS' RELIGION IN NIGERIA

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ABSTRACT

Infant mortality remains high in Nigeria despite the various policies that have been implemented by the authorities to reduce it. Although studies have examined various factors that explain infant mortality, effects of mothers' religion on infant mortality has been rarely explored. This study investigated the effect of mothers' religion on infant mortality in Nigeria. The study analysed secondary data from the 2013 Nigeria Demographic and Health Survey (NDHS). Cox hazard regression analysis was performed on a nationally representative sample of 2027 children. Results were presented as hazard ratios (HR) with 95% confidence intervals (CI). Findings from the study showed that the risk of infant mortality were substantially different by mothers' religion. For instance, risk of death were significantly lower for infants born to Muslim mothers [HR=0.54, CI=0.37–0.78] and Traditionalist mothers [HR=0.47, CI=0.13–1.62], compared to infants born to Christian mothers. Besides, education and residence showed statistical significance for elevating the hazards of infant mortality ($p < 0.05$). The findings of this study emphasize the need to address religious practices that negatively impact on infant health and survival among the religious groups in Nigeria.

CHAPTER ONE: INTRODUCTION

1.1.Introduction

High infant mortality rates in Nigeria remains a cause for concern. Countries across the world use infant mortality as an indicator of development, society's living standard and socioeconomic wellbeing (World Bank, 2014). An outlook on the current trends shows that patterns of infant mortality in Nigeria have only noticed minimal reductions in infant mortality rate in the last five years (2010-2014). For example, between 1990 and 1994, about 126 to 125 deaths per 1000 live births were recorded versus the rates of 82 to 74 deaths between 2010 and 2014 (World Bank, 2014). Such high rates of infant mortality suggest that the MDG goal of reducing infant mortality were largely unattained in Nigeria. Nigeria is therefore one of the least successful countries in Sub Saharan Africa with regards to improvements in child mortality. This is even direr given that 13% of under five deaths occur in Nigeria, second only to India's 21%, which together add up to more than a third of all under five mortality globally (UNICEF, 2014).

The area of infant mortality is well researched, but previous studies have mainly focused on biological and other socioeconomic factors associated with infant mortality. Other studies that explore the impact of religion on health in developing countries such as Nigeria though insightful tend to be largely limited in scope and geographical coverage (Adeleye & Ofoegbu, 2013; Aigbe & Zannu, 2012; Sartorius et al., 2007; Ntenda et al., 2014). This study therefore takes a different approach by investigating the effect of mother's religion on infant mortality. This is mainly because religion, described in terms of institutions characterized by their differences, specific norms and behaviours, obligations required from members and distinct ways of organising themselves, is important in understanding certain individual or group behavioural choices ((Miller & Thoresen, 2003; Antai, 2009). A particular system of belief practiced by a given set of people to which they are devoted has the potential of affecting decisions taken by would-be mothers. It can explain the reasons for a number of decisions that they take based on what they believe or subscribe to.

In Nigeria, there are three major religious groups, namely: Christians, Muslims and Traditionalists. The Muslims (mostly Sunni) makes up about 50% of the Nigerian population predominantly in Northern Nigeria, Christians 40% found mainly in the middle belt and southern Nigeria and 10% for traditionalists respectively (National Population Commission (NPC), 2004; Geissler, 1998). Thus, within the context of the high figures highlighted above – on the rates of infant mortality in the country – it becomes imperative to investigate the roles

that these dominant religious groups play in either positively or negatively contributing to the rates of infant mortality in Nigeria. It is therefore against this gap that my study aims to investigate the effects of the mother's religion on infant mortality in Nigeria and contribute to studies that explore factors that explain infant mortality in developing countries.

1.2.Problem Statement

Nigeria is one of the countries in Sub Saharan Africa with the highest rate of infant mortality. From 1990 to 1994, infant mortality rate in Nigeria was about 126 to 125 deaths per 1000 live births which is undoubtedly high but decreased to 82 to 74 deaths per 1000 live births between 2010 and 2013 (World Bank, 2014). As at 2014, infant mortality rate still remained at 74.09 deaths per 1000 live births which clearly indicates that there had not being any change in the rate compared to 2013 (CIA World fact book, 2014). From the data highlighted here, there is a clear indication that infant mortality remains very high within the Nigerian socio-political space. In spite of the ostensible decline in the rates of infant mortality between 1990 and 2014, it cannot be disputed that the current rates are problematic and require a great deal of action hence the drives within government and international development structures to pursue strategies to reduce this worrying trend.

The fact that infant mortality remains on the increase within Nigeria points to a number of implications. Firstly the country loses many lives. Secondly, there are enormous socio-cultural, economic and political issues that negatively affect efforts geared toward actualising goal of reduced infant mortality. Thirdly, there is a need for better and more strategic research conducted on factors that explain this problem in Nigeria with a view to adequately understanding it and thus more effectively tackling the issue. This is even more critical because infant mortality is an important development indicator recognized globally, hence the drives towards reducing it to its barest minimum.

Furthermore, infant mortality affects both family and the society at large. At the level of the family, children serve as a means of wealth flow and also as a means of generating income when used for labour in order to augment family income but due to the high rate of infant mortality in Nigeria, the future wealth flow to parents are being constrained (Sanjaya, 2010). This implies that families especially in the rural setting can no longer depend on their progenies to take care of them as infants die even before reaching their first birthday. At a societal level, infant mortality can have the long term implication of perpetuated underdevelopment within rural areas. If children are dying before reaching their first birthday, it means that there will be a limited number of people who will be able to contribute to long term development within

those communities. Therefore, high infant mortality in Nigeria has negative developmental implications for the family and society at large and thus calls for immediate actions and strategies geared towards its reduction.

1.3. Research question

- Does mother's religion affect infant mortality in Nigeria?

1.4. Objectives

1.4.1. General Objective

- To determine the effect of mother's religion on infant mortality in Nigeria.

1.4.2. Specific objectives

- To examine the levels of infant mortality in Nigeria
- To investigate the effect of religion on infant mortality in Nigeria.

1.5. Justification of study

The effect of religion on infant mortality is an understudied area in Nigeria. Although infant mortality is a well-researched area but previous studies have focused on the biological and socio-economic factors associated with infant mortality. These biological, social-economic and environmental factors include among others; birth order, child's sex, maternal age of the mother, sanitation, and parental education especially mothers education and drinking water source (Muttunga, 2007; Mesike et al., 2012; Wahab et al., 2013; Morgan, 2014). Previous studies have been limited in that they have analysed the association between religion and infant mortality due to their use of regression models other than the cox proportional hazard model to establish causation (Menon et al., 2015). These studies though insightful have analysed religion broadly instead of investigating the specific effects of each religious groups (Antai et al., 2009; Antai, 2009; Ha et al., 2014).

Also studies such as Antai et al., (2009) on the inequities in *under-five mortality in Nigeria: Differentials by religious affiliation of the mother* show the extent to which religious beliefs can impact on infant mortality (Antai et al., 2009). Since religion plays a critical role in decisions taken by people in Nigeria, it becomes much clearer why religion can go a long way in impacting decisions to affect infant mortality – either positively or negatively. However, while this gives insight on this role that traditional religion could play, it does not effectively answer questions related to other religions such as Christianity and Muslim. In fact, it focuses

on religion broadly without exploring the direct effect of the mother's religion in this regard. This lack in investigating the specific effects of Christian and Muslim religion and the limitation in the scope covered by existing literature is the gap which my study seeks to fill. In essence, my investigation of the effects of Mother's religion on infant mortality in Nigeria would be a useful approach towards exploring the question of infant mortality in Nigeria.

The study of infant mortality is important in any given society as infant mortality is recognised as a general health indicator of a population (Reidpath et al., 2003). In Nigeria, policies were proposed to reduce the high rates of infant mortality. Amongst others is the National Child Health Policy (Nigeria Ministry of Health, 2006) whose focus was mainly on reduce maternal and child mortality with the goal of ensuring the survival and healthy growth and development of the Nigerian Child but fails to address the issue of infant mortality which remains an indicator of development and the health status of the nation. Secondly, the current high rates of infant mortality thus indicate that one of the objectives of National Child Health Policy which is reduce infant mortality rate by half the 1990 rate by the year 2015 was largely unattained.

Motivated by this research gap and the policy limitations discussed above, this research takes on a different approach by studying a rarely explored and salient area within infant mortality; investigating the specific effect of each religious groups of mothers affiliation on infant mortality in Nigeria.

CHAPTER TWO: LITERATURE REVIEW

2.1. Literature review

Infant mortality has been widely used in research as a leading indicator of population health in past years (Reidpath and Allotey, 2003). This is evident through the various research which has determined that an infant's wellbeing is largely dependent on the socioeconomic conditions of the environment, more than any other age group (Madise et al, 2001). Infants are the most vulnerable to poverty and substandard living conditions, therefore infant mortality acts as a social mirror as it reflects the social inequalities which are in existence in any society (Ucha, 2010). Infant mortality is thus used in this study as it is the most important indicator of socio-economic conditions in any given society.

Infant mortality is believed to have immense variation in and amongst nations (Frey and Field, 2000), with less developed nations indicating the highest rates of infant mortality worldwide (Kalipeni, 2000). This high IMR have been found to be about 75 per 1000 birth compared to other regions of the world especially in Europe where the IMR is about six times lower than the rates in Sub-Saharan Africa (Sartorius et al., 2014; Black et al., 2003). In previous years the infant mortality rate in Sub-Saharan Africa showed a declining trend. This trend slowly came to a halt and was eventually reversed, which is evident in the more recent infant mortality rates that indicate that infant mortality is on the rise (Schell et al, 2007). This trend have been shown to have fluctuated in Kenya in the last 40 years, from about 119 per 1000 live births to 66 per 1000 live births in 1989. Although there was a rise in the rates to 77.3 per 1000 live births (CBS 2004). Additionally, Tanzania, like many African countries, suffers a large amount of unnecessary and preventable infant deaths yearly (Frey and Field, 2000). However, the trends have been observed to have declined in Tanzania from 99 per 1000 birth in 1994-1996 to about 68 per 1000 in 2000-2004 (Schellenberg et al., 2008). Although there had being in decline in infant mortality in the Sub Saharan African region, these rates are seemingly high and thus infant mortality trend is still regarded as a health burden.

Infant mortality rate has remained very high in the Sub-Saharan African region compared to other regions of the world in spite of some reported gains or successes (Demombynes, 2012). These worrying rates were more observed in the West African region of Sub-Saharan Africa. "In Ghana, approximately half of the deaths to children occur during their first year of life". In 1990, the IMR was 57 per 1000 live births, it however increased to 80 per 1000 live births in 2010 and then declined to 52 per 1000 live births in 2014 (UNICEF, 2013). In contrast, the

IMR in Ivory Coast have shown only a slight decline as it has being within 77-71 per 1000 live births within 2010-2014 (World Bank, 2013). Liberia and Cameroon like many West African countries have a high rate of infant mortality of 60-54 and 66-61 per 1000 live birth. The causes of these high have being attributed to the socioeconomic conditions and the general quality of life in these countries (Mustafa and Odimegwu 2008).

Similar to other countries in the Western African region, Infant mortality has being an issue of great concern in Nigeria. This issue has lingered for years starting from the period of colonialism where the highest death burden was observed amongst infants, children and women (Tol, 2007). In current times, the rates is still within 82-74 per 1000 live births from the period of 2010-2104, which is still unacceptably high (World Bank, 2013). Several factors have being enlisted to account for this high rate of IMR in Nigeria. Data from National Health Management Information Systems (NHMIS) indicated that Malaria amongst others is the leading cause of infant death in Nigeria (Adeleye et al., 2013). Additionally, Diarrhoea, Acute Respiratory Infection and Pneumonia are some of the other common causes of infant mortality in Nigeria (UNICEF, 2010).

Infant mortality in Nigeria has being reported to be influenced by a host of socioeconomic determinants (Madise et al 2003). These determinants are mothers' age at birth, education, mothers' wealth status, mothers' religion. Others are breastfeeding, ethnicity, birth order and birth intervals (Ajaero et al 2013; Mustafa & Odimegwu, 2008).

Various determinants of infant mortality has being explored extensively over the years. The influence of mothers' religion on infant mortality has being established by a few existing research (Antai et al 2009; Verona et al 2010). Nigeria has three major religious groups; Christian, Islam and Traditional. From literature, this religious groups play a vital role in health at an individual and societal level (National population Commission NPC, 2004). The religion-health connection being a rarely researched area is beginning to gain much attention in recent times. For most research, religion has been used as a control variable, yet with surprising consistency, religious variables were mostly found to have a significant association with the health outcome (Koenig et al., 2000; Ellison et al., 1998). From previous studies, mothers' religion have been known to have a significant influence on the health outcomes of her children. According to Ellison et al. 1998, there is a compelling evidence that the behaviour and lifestyle of mothers in relation to the health of their children is mainly influenced by the teachings of the religious group they are affiliated to. Secondly, in relation to infant mortality, the rates vary

across the three major religious groups in Nigeria therefore giving insight to the extent at which mothers' religion determine infant mortality (Ellison et al., 1998; Antai, 2009).

2.2. Theoretical and Conceptual framework

The framework for this study will be based on those of Mosley and Chen model (1984), which focuses on child survival in developing countries. In this model, both biological and social factors that impact on infant and child mortality are captured. Thus the model is an effective approach in attempt to measure morbidity and mortality in developing countries, particularly Nigeria (Mosley and Chen, 1984).

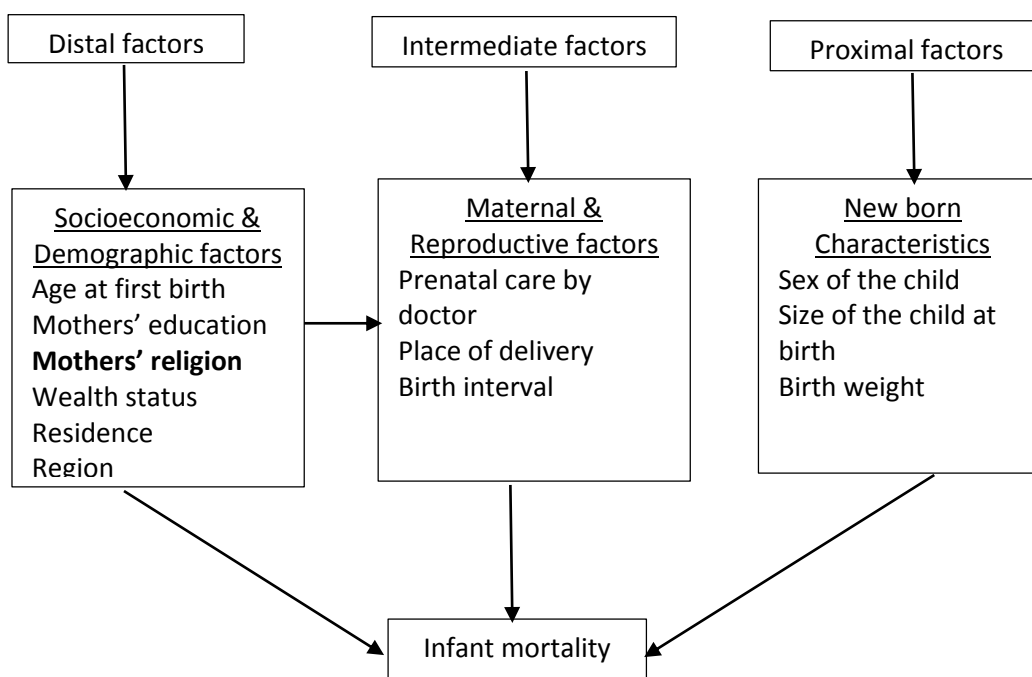


Figure 1: Adapted framework for the study of mothers' religion and infant mortality (Mosley and Chen, 1984)

2.3. Statement of Hypothesis

H₀: Mothers' religion do not significantly affect infant mortality in Nigeria

H₁: Mothers' religion significantly affect infant mortality in Nigeria

CHAPTER THREE: METHODOLOGY

3.1. Data Source

Data for this study is drawn from the Nigeria Demographic and Health (NDHS). The NDHS is a nationally representative survey.

3.2. Study Population

The study population for this research is 2027 dead infants reported from a total of 31482 children born in the last five years prior to the survey.

3.3. Study Design

The Nigerian DHS study is cross-sectional as it collects information on a sample of the Nigerian population at one point in time.

3.4. Variable Description

3.4.1. Outcome Variable

The outcome variable for this research is infant mortality. Infant mortality is death of infant before reaching their first birthday or infant death under one year (0-11) months. Therefore time to death was measured in months and infants who survived beyond 11 months were censored at that time for survival analysis. This variable was derived by asking the mother firstly whether each child is alive or not and if the child died a second question was asked on the age at which the child died. In the DHS, the variable age at death (imputed in months) was used and all the deaths that were 12 months and less were categorised into infant mortality.

Table 1: Description of the outcome variable Infant mortality

Variable	Category
Infant mortality	No (0)
	Yes (1)

3.4.2. Main Independent Variable

The main independent variable for this study is Mothers' Religion and it was derived by asking the mothers what religion they belonged to. This variable was classified in the NDHS 2013 as "Catholics" "Other Christians" "Islam" "Traditionalist and "Others". However the variable was recoded into three categories as follows; the first category is "Christians", second category "Islam" and the last category is "Traditionalist".

3.4.3. Control Variables

The following control variables were identified; religion, region, mothers' age at first birth, place of residence, sex of the child, highest education level. The use of maternal and child health services were assessed by place of delivery and prenatal care by doctor. The selection of variables was guided firstly by the reviewing of relevant literature and then secondly by identifying the relevant variables suitable for this study in the NDHS.

Table 2: Description of the independent variables

Variables	Category
Age	15-24 (1), 25-24 (2), 35+ (3)
Religion	Christian (1), Islam (2), Traditionalist (3)
Highest education level	No education (0), Primary (1), Secondary (2), Higher (3)
Residence	Urban (1), Rural (2)
Sex of the child	Male (1), Female (2)
Delivery place	Home (1), Government health facility (3), Private health facility (4)
Prenatal care by doctor	No (0), Yes (1)

3.5. Analysis Plan

Univariate analysis was run where the frequency and percentages of the outcome and independent variables were tabulated thus describing the variables. For the descriptive statistics three graphs were plotted. They include the Kaplan-Meier survival curve for all infants, survival curve for infants by mothers' religion and the mortality hazard curve of all infants. The survival estimation graphs show the probability of infants surviving over the time period and hazard function graph shows the probability of dying over the same period of time.

For the statistical inference, a Cox proportional hazard regression model was used to test for the effect of mothers' religion on infant mortality while controlling for covariates. The Cox regression model is a useful technique for analysing survival data and it caters for censoring in mortality data. It models time-to-event which in this case is the time-to-infant mortality. The probability of infant mortality is called the hazard and it was modelled using the following equation.

$$H(t) = H_0(t) \times \exp(b_1x_1 + b_2x_2 + \dots + b_kx_k) \dots \dots \dots (1)$$

Where $x_1 \dots x_k$ are a collection of independent variables and $H_0(t)$ is the baseline hazard at time t , representing the hazard for infants with the value 0 for all the explanatory variables. By dividing both sides of equation 1 by $H_0(t)$ and taking logarithms, the equation 1 become

$$\left[\frac{H(t)}{H_0(t)} \right] = b_1x_1 + b_2x_2 + \dots + b_kx_k \dots \dots \dots (2)$$

Where $H(t)/H_0(t)$ is regarded as the hazard ratio. The coefficients $b_1 \dots b_k$ are estimated by Cox regression model (Vittinghoff et al., 2010)

The Cox regression model rely on an assumption thus only predictor variables that had passed the cox proportional assumption were used for the multivariate analysis. The assumption of the Cox proportional hazard model is that the hazard ratio associated with each covariate is constant over time. The Schoenfeld test of proportionality assumption was performed to check for model assumption violation and to ensure that variables entered into the Cox proportional hazard model do not violate the assumption. This test was done by regressing each independent variable and if the p-value was significant, less than 0.05, then the assumption is violated and if it is insignificant it is not violated. Interpretation of results was done using hazard ratios. The level of significance was set at $p < 0.05$ and confidence intervals of 95% were used. For the data manipulation and management Stata version 12 was used.

CHAPTER FOUR: RESULTS

4.1. Univariate analysis

The univariate analysis made use of the women and children survey from the Nigerian Demographic and Health Survey 2013. The outcome variable infant mortality was run, as well as each of the independent demographic, socio-economic and use of maternal and child health variables, to produce the table below.

Table 3: Weighted Frequency and percentage distribution of demographic, socio-economic and use of maternal & child health service variables.

Variable/Category	Frequency n=31828	Percentage
Infant mortality		
No	29801	93.63
Yes	2027	6.37
Religion		
Christian	11647	36.83
Islam	19689	62.25
Traditionalist	291	0.92
Region		
North Central	4340	13.63
North East	5578	17.53
North West	11775	36.99
South East	2840	8.92
South South	2935	9.22
South West	4360	13.70
Age at first birth		
15-24	27959	87.84
25-34	3768	11.83
35+	105	0.33
Highest Education Level		
No education	15657	49.19
Primary	6127	19.25
Secondary	8211	25.80
Higher	1834	5.76
Type of residence		
Urban	11126	34.96
Rural	20702	65.04
Sex of the child		
Male	16057	50.45
Female	15771	49.55
Place of delivery		
Home	20077	63.81
Government health facility	7179	22.82
Private health facility	4208	13.37
Prenatal care		

No	15115	74.51
Yes	5172	25.49

Table 3 is a summary of the univariate analysis, which portrays the characteristics of the women and Children in Nigeria. The table indicates a weighted value of 31828 children born in the last five years prior to the survey from which a total of 2027 infants experienced infant mortality. Thus 6% of infants experienced infant mortality in Nigeria in the 5 year period prior to and including the year which the survey was conducted. As seen in the table, the demographic characteristic religion of mothers indicates the proportion of mothers in the different religious groups in the study sample. The table shows that a significant number of women in Nigeria are Muslims (62%), followed by Christians with (37%) while traditionalist are just 1%.

4.2. Descriptive Statistics

Figure 2 shows the overall survival estimate of infants over a period of 0-11 months. It starts off at about 100% and it steadily decreases to almost 85% at the first month. By the end of the 11 months, the survival probability had decreased to roughly 5%.

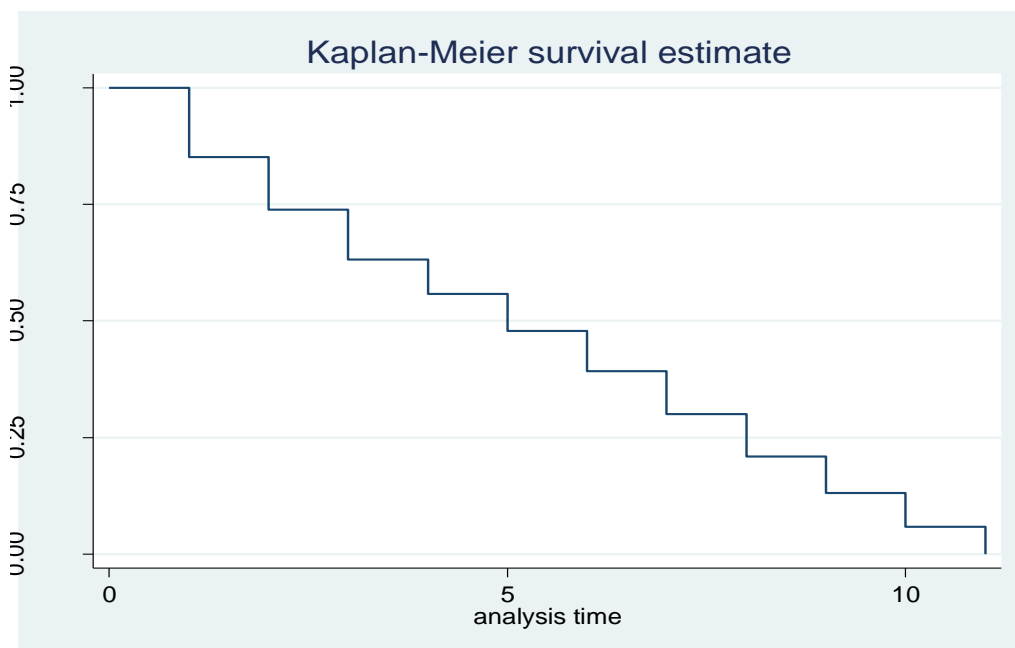


Figure 2: Kaplan-Meier Survival Estimation Curve

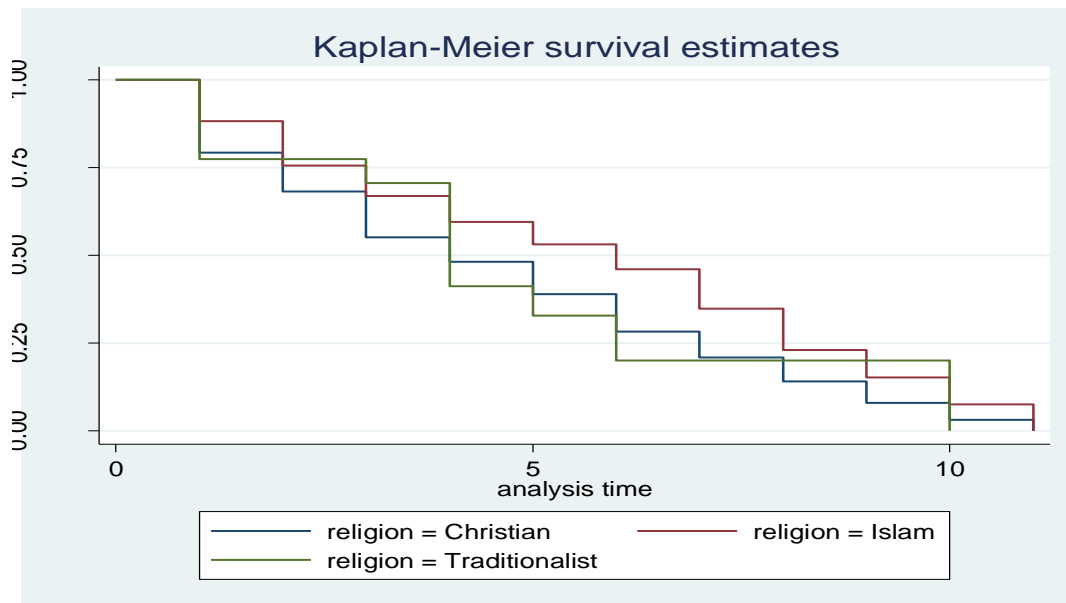


Figure 3: Kaplan-Meier Survival estimate by Religion

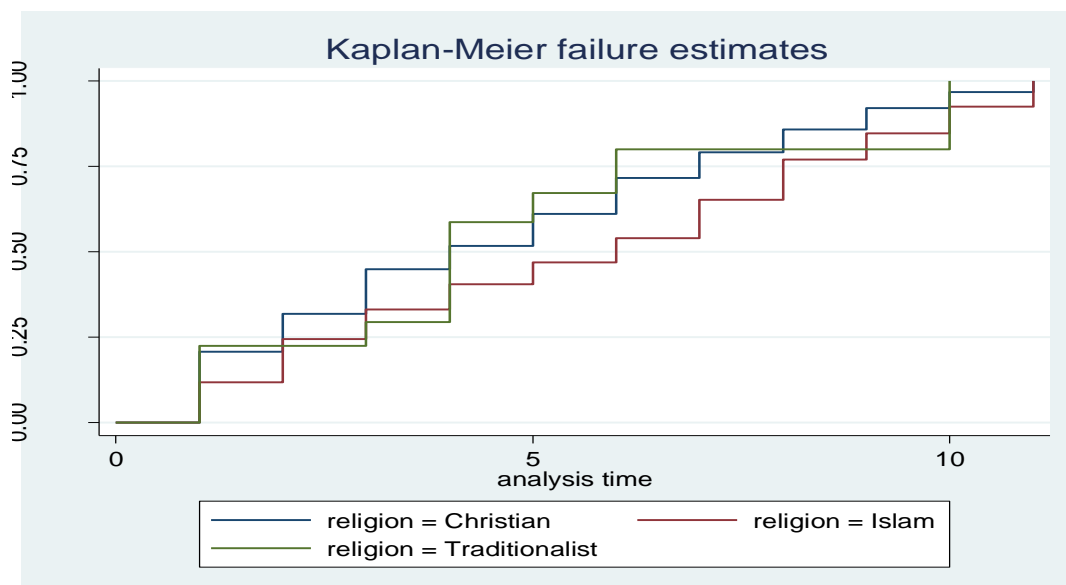


Figure 4: Kaplan-Meier failure estimates by Religion

Table 4: Test for Proportional Hazard assumption results

Variable/Category	rho	chi2	df	Prob>chi2
Religion				
Christian (ref)	-	-	1	-
Islam	0.08959	2.79	1	0.0948
Traditionalist	0.03759	0.52	1	0.1223
Region				
North Central (ref)	-	-	1	-
North East	0.04497	0.74	1	0.3886
North West	0.05651	0.92	1	0.3375
South East	0.01905	0.14	1	0.7119
South South	0.12462	5.71	1	0.0169
South West	-0.05054	0.80	1	0.3714
Age at first birth				
15-24 (ref)	-	-	1	-
25-34	-0.02967	2.79	1	0.0948
35+	-0.07308	2.39	1	0.4715
Highest Education Level				
No education (ref)	-	-	1	-
Primary	-0.09983	3.67	1	0.0553
Secondary	-0.02258	0.19	1	0.6654
Higher	0.02100	0.16	1	0.6906
Type of residence				
Urban (ref)	-	-	1	-
Rural	0.0478	0.50	1	0.4781
Sex of the child				
Male	-	-	1	-
Female	0.09790	3.18	1	0.0745
Place of delivery				
Home (ref)	-	-	1	-
Government health facility	0.01836	0.11	1	0.7407
Private health facility	0.06735	1.88	1	0.1709
Prenatal care				
No	-	-	1	-
Yes	-0.01967	0.12	1	0.7244
Global test		32.92	17	0.0116

Results from table 4 shows the test for proportional hazard assumption. It indicate that the main independent variable and the covariates did not violate the assumption and thus could go into the Cox Proportional Regression model.

4.3. Analysis

Table 5: Multivariate Analysis Results

Variable/Category	HR	95% CI	P-value
Age at first birth			
15-24 (ref)	1	-	-
25-34	1.06	0.73 - 1.55	0.75
35+	0.68	0.68 - 6.70	0.74
Religion			
Christian (ref)	1	-	-
Islam	0.54	0.37 - 0.78	0.00
Traditionalist	0.47	0.13 - 1.62	0.23
Region			
North Central (ref)	1	-	-
North East	0.78	0.50 - 1.24	0.29
North West	1.31	0.84 - 1.94	0.17
South East	1.48	0.89 - 2.45	0.13
South South	0.78	0.47 - 1.29	0.34
South West	1.04	0.64 - 1.68	0.88
Highest Education Level			
No education (ref)	1	-	-
Primary	0.73	0.52 - 1.04	0.09
Secondary	0.62	0.42 - 0.91	0.02
Higher	0.76	0.40 - 1.45	0.41
Type of residence			
Urban (ref)	1	-	-
Rural	1.44	1.07 - 1.93	0.01
Sex of the child			
Male	1	-	-
Female	0.91	0.77 - 1.19	0.64
Place of delivery			
Home (ref)	1	-	-
Government health facility	0.74	0.52 - 1.04	0.08
Private health facility	0.87	0.52 - 1.27	0.37
Prenatal care			
No	1	-	-
Yes	0.74	0.53 - 1.04	0.08

Table 5 is the results of the Cox proportional hazard regression analysis. The main independent variable was the mothers' religion and it was controlled by the delivery place, residence, education, region, sex, mothers' age at first birth and prenatal care by doctor. The main independent variable; mothers' religion, was significantly associated with the outcome; infant

mortality. Thus, from the analysis there is a 46% lower hazard of infant mortality with Islamic mothers compared to Christian mothers [HR=0.54; CI=0.37-0.78]. Other control variables that were significant with infant mortality are residence and education level. The analysis found that infants born to mothers who resides at a rural residence had a significantly higher risk of infant mortality [HR=1.44; CI=1.07-1.93] compared to infant born to mothers who stay in urban residents. Furthermore, infants whose mothers have attained secondary education had lower risk of mortality [HR=0.62; CI=0.42-0.91] compared those whose mothers have no formal education, holding other covariate constant.

CHAPTER FIVE: DISCUSSION

The main aim of this research was to determine the effects of mothers' religion on infant mortality in Nigeria. In doing this, the two specific objectives were addressed; firstly to examine the trends of infant mortality in Nigeria; secondly, to investigate the effect of religion on infant mortality in Nigeria. After running the Cox Hazard regression analysis, the results indicate a significant relationship between mothers' religion and infant mortality, thus consistent with the findings of Antai et al., 2009 which established a significant variation in infant mortality by mothers' religion. However, this result contradicts those of Kanmiki et al., 2014 conducted in Ghana which found religion to be insignificantly related to infant mortality.

Further, infant of mothers affiliated to Islam religion had lower risk of death compared to infants of a Christian mother. These results is not in conformity with the findings Adhikari and Sawangdee (2011) whose results indicate a higher risk of infant mortality among infants born to Islam mothers and Traditionalist mothers compared to Christian mothers. A plausible explanation to this could be that Muslim girls tends to marry earlier and thus most likely to conceive very earlier (Adhikari and Sawangdee, 2011). At the early age of marriage, their bodies may not have been biological mature enough for reproduction, this in turn lead to increased risk of infant and maternal mortality and morbidity. In addition, Cultural beliefs and practices by the Islam religion which influences prenatal care and place of delivery could be a possible reason for the increased risk of infant death (Adhikari and Sawangdee, 2011).

Differences in the level of education attainment and place of residence also seem to have contributed to the differences in infant mortality by mothers' religion. Expectedly, infants born to mothers who are educated are less at risk of death compared to those whose mothers have no formal education. This could be attributed to the fact that education makes women more likely to marry later and it influences the number of children born, utilization of prenatal care and postnatal care. The rural areas in Nigerian are characterised by poverty where households are overcrowded and of low economic status. This may be linked to the results of this study which is also in line with findings of Ezeh et al., (2015) that rural residents had a higher likelihood of infant death.

CHAPTER SIX: LIMITATIONS AND CONCLUSION

This study has effectively demonstrated that there is a strong link between infant mortality and mother's religion in Nigeria. This was done through the cox proportional hazard model which tested for causation within the data used for this analysis. The NDHS study design is a cross sectional study and therefore the information on the explanatory and the outcome variables are collected at the same point in time thus, temporarily cannot be truly assessed. The DHS is also limited in its ability to provide information on causes of death. Due to recall bias, the reporting of age and other time bound events may be inaccurate and thus dates of birth and deaths of infant given by their mothers may have been misreported, particularly those that had occurred few months or years before the survey.

In conclusion, mothers' religion significantly affect infant mortality in Nigeria. Thus the hypothesis tested was rejected. The results suggest that some of the infant mortality recorded in Nigeria are due to the doctrines, beliefs and values associated with these religious groups. Therefore in order to reduce infant mortality further in Nigeria, questionable religious practices which negatively impact on infant health and survival should be addressed among the various religious groups in Nigeria. Thus, in terms of policy intervention, this research can be drawn upon to support existing policies such as the Nigeria Child Health Policy (2006), National Strategic Health Development Plan (2010-2015) and the Save the Children project (2011) that are geared toward actualising the goal of reducing infant mortality in Nigeria. In essence it provides a firm footing upon which policy makers can interact better with religious leaders to more actively support the drive to reduce this trend. Furthermore, this research should encourage future studies on religion and health related outcomes in Nigeria using multi-level analysis especially within the context of the diverse religious groups as well as the trend of current religious violence Nigeria.

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