

Demographic and Socioeconomic Factors Associated with Under-Five Mortality in Adamawa State of Nigeria

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Abstract

Background

The United Nations Children's Fund (UNICEF) identifies that children are at a greater risk of dying before age five if they are born in rural areas, among the poor, or to mothers who have no basic education. This study aimed to examine the influence of the demographic and socioeconomic characteristics of women of child bearing age on the survival of their under-five years children.

Methods

This cross-sectional descriptive study employed the use of quantitative data derived from primary sources. The study participants were selected from communities in three Local Government Areas of Adamawa State using a multi-stage sampling technique. Data was collected using a structured questionnaire. The demographic and socioeconomic variables analyzed include age, Level of education, marital status, occupation, average monthly income, ethnicity, religion, living with spouse/partner. Chi square test of significance was used to analyze the categorical data, while logistic regression was used to determine the variables that were the most predictive of under-five mortality.

Results

Four hundred and thirty-eight mothers aged between 15 and 49 years (mean 30.8 +/- 9) consented and completed the interviews in the different communities studied. One hundred and seventy-two (39.3%) of the mothers had experienced the death of at least one child before the attainment of five years. The bivariate analysis of the demographic and socio-economic characteristics of the mothers depicts a statistically significant relationship between mothers' education, mother monthly income, ethnicity, religion, marital status as well as occupation of partner and under-five child mortality. Age of mothers and Occupation had no statistical significant relationship with under-five child mortality. The, low educational status, widowed and divorcees, who had no other source of income than housewifery were significantly more likely to have an under-five mortality compared to their counterparts (p-value <0.05). On multinomial logistic regression beta coefficient, of all the variables, religion was the only significant causing under 5 mortality.

Conclusion

Despite concerted efforts by several international organizations to reduce under-five mortality worldwide, there remains unacceptably high numbers of children dying before reaching the age of five years in Adamawa State, Nigeria. Low educational status, low income, maternal unemployment, divorce and widowed status were noted to be important predictors of a woman experiencing the death of her under-five children. The continued practice of girl child marriage, high divorce rate and the paralysis of economic activities by the insurgency in the Northeast, Nigeria may be indirectly sustaining the high under-five mortality in Adamawa State.

Recommendations

Government should step up efforts in improving girl child education, provide better maternal and child health services and combat the insurgency in order to reduce child mortality in Adamawa state

Key Words: Demographic, Socio-economic, under-five mortality, Adamawa State, Nigeria.

I. INTRODUCTION

The United Nations in the year 2000 had the 191 member-states commit to the attainment of the Millennium Development Goals (MDGs) by 2015, among which was the reduction of childhood mortality.¹ Whereas child survival has been improving since 1990, there has been an accelerated improvement globally between 2000 and 2016 resulting in the prevention of 50 million childhood deaths in that period.² Despite those remarkable improvements on the global stage, there remain the worrisome disparities in the under-five mortality rates across the different regions of the world. For instance, while the under-five mortality rate in the western industrialized countries is about 1 in 189, the corresponding rates in sub-Saharan African countries is 1 in 13, amounting to about 15-fold increase.²

The United Nations Children's Fund (UNICEF) identifies that children are at a greater risk of dying before age five if they are born in rural areas, among the poor, or to mothers who have no basic education.³

II. METHODS

2.1: Study Location

Adamawa is one of the largest States of Nigeria and occupies about 36,917 square kilometers. It is bordered by the States of Borno to the northwest, Gombe to the west and Taraba to the southwest. Its eastern border forms the eastern national border with Cameroon.¹⁰ The State consists of twenty-one Local Government Areas.

The occupation of the people is mainly farming as reflected in their two notable vegetational zones, the Sub-Sudan and Northern Guinea Savannah Zone.¹⁰ The cash crops grown are mainly cotton and groundnuts while food crops include maize, yam, cassava, guinea corn, millet and rice. The people living along the banks of the rivers engage in fishing while the Fulanis are cattle rearers¹⁰.

Adamawa State has been impacted by the Islamist insurgency of Boko Haram in Nigeria. As of November 30, 2014, the State had become home to camps housing an estimated 35,000 internally displaced persons fleeing from the violence of Boko Haram¹⁰.

2.2: Study design

This was a cross sectional descriptive study, which used quantitative data derived from primary sources. The study sites were determined by multi-stage sampling technique. The first stage consisted of grouping the Northern States in Nigeria into three Geo-political zones - North East, North Central and North West from which the North East was selected. The second stage was the selection of Adamawa State from the North- East. The third stage was a systematic selection of three (14%) of the 21 Local Government Areas (LGAs) from Adamawa State. The LGAs selected were Guyuk, Michika and Yola North. The fourth stage consisted of selecting representative communities in each LGA (with the aid of locality/enumeration areas list prepared for 2006 Population Census). The fifth stage consisted of selection of respondents in each of the selected communities.

The respondents were women aged 15-49 years, who have had or reared children. Households in this study were the sampling unit, which included individuals living together in the same house or compound and sharing the same household utilities or arrangements

The sample size was determined by the Krejcie and Morgan formula and adopted as follows¹¹:

$$n = \frac{\chi^2 * N * P * (1 - P)}{(ME^2 * (N - 1)) + (\chi^2 * P * (1 - P))}$$

- Where n is the minimum sample size.

χ^2 is chi-squared value for the specified confidence level at 1 degree of freedom.

N is total population size.

In 2016, the under-five mortality rate in low-income countries was 73.1 deaths per 1000 live births, about 14 times the average rate in high-income countries (5.3 deaths per 1000 live births).⁴ In Sub-Saharan Africa, 1 child in 13 died before the fifth birthday, amounting to 5.6 million under-five deaths in 2016 and 15 000 every day⁴. It is therefore necessary to reduce these inequities among countries in order to save more children's lives through ending preventable child deaths and making those as important priorities.

In some sub-Saharan African countries with low socio-economic standards, under-five mortality is relatively high with a recent reported national figure of 90 per 1000 live births in Ghana.⁵

Millions of children under-five years of age die every year from preventable causes such as pneumonia, diarrhea and malaria.⁶ In about half of the cases, malnutrition plays a role, along with several other significant contributing factors. For this reason, child mortality is a key indicator not only for child health and well-being, but for overall progress towards the Sustainable Development Goals (SDGs).⁶

Childhood mortality can be prevented through prompt and exclusive breastfeeding, access to skilled health personnel for antenatal, birth, and postnatal care, improving access to macro and micro nutrients, promoting knowledge of danger signs among family members, improving access to social amenities, and hygiene and providing immunizations.⁴ Many of these lifesaving interventions are beyond the reach of the world's poorest communities.

Several factors influence child health and survival. These include mothers age, mother's education, sex of child, religion of parents, household headship and socio-economic status.⁷ This justifies the need to integrate maternal, newborn and child health interventions.

Nigeria loses about 2,300 under-fives and 145 women of childbearing age daily, making her the second largest contributor to the under-five and maternal mortality rate in the world.⁸ The deaths of newborn babies in Nigeria represent a quarter of the total number of deaths of children under-five. The majority of these occur within the first week of life, mainly due to complications of pregnancy and delivery reflecting the intimate link between newborn survival and the quality of maternal care.

Under-five mortality rate in Nigeria 2016 was 104.3/ 1000 live births, but there exist wide regional disparities in child health indicators with the North-East and the North-West geopolitical zones of the country having the worst child survival indices of 260/1000 live births and 269/1000 live births respectively.⁹

The aim of this study was to examine the influence of the demographic and socioeconomic characteristics of women of child bearing age on the survival of their under- five years children in Adamawa State.

P is population proportion.

ME is the desired margin of error expressed as a percentage.

For this study, P was set at 0.50 consistent with standard practice when no information is available about the sample proportion. Further, a confidence interval of 95% and a 2.5% margin of error (ME) were adopted. According to the National Population Commission (NPC), the total number of women aged 15-49 years in the selected Local Government Areas was 419927 in 2010¹². Imputing these figures in the above formula gave a minimum sample size, n, of 1535. Next, this sample size was distributed among the three LGAs as a weighted proportion of population. Thus:

$$\left(\frac{POP_i}{N}\right) * C.I.(0.95); ME(.25)$$

Where POP_i is the population of each LGA and n (for confidence interval 95% and 2.5% ME) is 1535. Finally, the sample size (sampling frame) for each LGA was as shown in Table 1 below:

Table 1: Sample size (Sampling frame) for Sampled LGAs

State	Total LGAs	Sampled LGAs	Population of Women Aged 15-49 Years	(95% CI; 2.5% ME)
Adamawa	21	Guyuk	419927	364
		Michika	36871	32
		Yola North	48271	42

Source: Field Survey, 2017.

Socioeconomic determinants of child mortality/survival were categorized into maternal, environmental contamination, nutrient deficiency and injury¹³. The study focused on the maternal factors such as age, level of education, marital status, occupation, income, ethnicity, religion and type of spousal ties.

2.3: Ethical considerations

Ethical clearance was obtained from the health research and ethics committee of the Ministry of Health in Adamawa State and informed consent was obtained from all the respondents

The data was analyzed using SPSS version 23.0. Chi square was used to test for significance

III. RESULTS

3.1: Demographic Characteristics of the Study Respondents

Four hundred and thirty-eight of the respondents aged between 15 to 49 years with a mean age of 30.8± 9.0 years were respondents for this study. Of this number 172 (39.3%) had experienced under-five mortality. Majority of the respondents 154 (35.2%) were between 25–34 years of age, while only 22 (5.0%) were between the ages of 45–49 years.

3.2: Socioeconomic characteristics of the respondents

Educationally, most (44.1%) of the respondents had secondary education while 16.4 % of them had no formal education. Based on ethnicity, more than half (50.9%) of the respondents were of the Lunguda ethnic extraction followed by the Hausa (29.0%), the Higgi (6.8%), while 6.8% of ‘other’ respondents belonged to 15 other ethnic groups. In terms of religious affiliation, 64.4% of the respondents were Christians, 32.4% were Muslims and 0.9%, traditional religious worshipers. As regards marital status, majority (90.4%) were married out of which 368 (84.0%) were living with their husbands.

Occupationally, majority (29.5%), of the respondents were housewives, 26.7% were traders and 25.3% were farmers. Only 16.0% were civil servants. The economic status of respondents based on average monthly income depicts that, majority of the respondents 296 (68.6%) earned less than ₦10,001 monthly, which is less than the national minimum wage of ₦18,000.00. Only 4.6% had an average monthly income of > ₦50,000 (Table 2).

In terms of spouse/partners’ occupation, majority (36.1%) were farmers, 28.1% were into traders, while 27.6% were civil servants (Table 2).

Table 2: Demographic Characteristics of Respondents

Age group (Years)	Frequency(=438)	Percentage (100.0)
15 - 24	135	30.8
25 - 34	154	35.2
35 - 44	100	22.8
45 - 49	22	5.0
No Response	27	6.2
Highest level of education	Frequency(N=438)	Percentage (100.0)
No Formal	72	16.4
Primary	103	23.5
Secondary	193	44.1
Tertiary	61	13.9
No Response	9	2.1
Occupation (Primary)	Frequency(N=438)	Percentage (100.0)
Civil Service	70	16
Farming	111	25.3
Housewife	129	29.5
Trading/Business	117	26.7
No Response	11	2.5
Occupation (Secondary)	Frequency(N=438)	Percentage (100.0)
Civil service	36	8.2
Farming	113	25.8
Housewife	159	36.3

Trading/business	118	26.9
No Response	12	2.7
Average monthly income (₦)	Frequency(N=438)	Percentage (100.0)
<N1,000	135	31.8
1,001-10,000	161	36.8
10,001- 50,000	109	24.9
>N50,000	20	4.6
No Response	13	3
Ethnic group	Frequency(N=438)	Percentage (100.0)
Hausa	127	29
Higgi	30	6.8
Lunguda	223	50.9
Fulfulde	20	4.6
Others	30	6.8
No Response	8	1.8
Religion	Frequency(N=438)	Percentage (100.0)
Christians	282	64.4
Islam	142	32.4
Traditional	4	0.9
No Response	10	2.3
Maritalstatus	Frequency(N=438)	Percentage (100.0)
Married	396	90.4
Widowed	14	3.2
Divorced	9	2.1
Separated	6	1.4
Single	6	1.4
No Response	7	1.6
Living with partner	Frequency(N=438)	Percentage (100.0)
No	28	6.4
Yes	368	84
No Response	42	9.6
Occupation of Spouse or partner	Frequency(N=438)	Percentage (100.0)
Civil Service	121	27.6
Farming	158	36.1
Trading/Business	123	28.1
Artisan	4	0.9
No Response	32	7.3

Source: Field Survey, 2017

3.3: Bivariate analysis of demographic and socio-economic characteristics of mothers' experience of under-five mortality

As a prelude to understanding the variation in under-five mortality by the demographic and socio-economic characteristics of respondents, they were asked if they had experienced under-five mortality. The results show that 39.3% (n=172) had experienced under five mortality, while 60.7 % (n=266) had not experienced such deaths.

The bivariate analysis of the demographic and socio-economic characteristics of the mothers who experienced under-five mortality is shown in Table 3 below. Those in the 15-24 years age group reported the highest (30.2%) incidence of childhood mortality. The p-value $0.057 > 0.05$, 95% CI, depicts a statistically not significant relationship between mothers age and under-five childmortality.

Respondents with secondary, primary and informal education were more likely to experience under-five mortality compared to those with tertiary level of education. Results put p-value of $0.000 = 0.005$, 95% CI expressing that education is statistically significant factor on under five child mortality. In terms of occupation, housewives had a higher (29.7%) incidence of under-five deaths compared to those with other occupations. The p-value $0.185 > 0.05$, 95% CI meaning a not statistically significant relationship between mothers' occupation and under-five child mortality.

Those with monthly income of $> \text{₦}50,000$ were least likely to experience under five child mortality respectively with a p-value of $0.001 < 0.05$ 95% CI expressing a statistically significant relationship between mothers' income and under five child mortality. Amongst the ethnic groups, under-five mortality was more amongst the Hausas, followed by the Fulani, while the ethnic group of Higgi reported the lowest incidence of under-five mortality. The p-value $0.000 < 0.05$, 95% CI depicts a statistically significant relationship between ethnicity and under-five child mortality.

Child mortality by religion showed that the Muslim and traditionalist mothers experienced the highest under-five mortality, while the Christian mothers had the least experience of under-five mortality proven a statistically significant relationship between religion and under-five child mortality with a p-value $0.000 < 0.05$, 95% CI.

According to marital status, the married had the highest (86%) under-five mortality followed by the widowed with p-value of $0.000 < 0.05$, 95% CI depicting statistically significant relationship between marital status and under-five child mortality. Those whose husbands/partners were civil servants had the highest under-five mortality. The p-value $0.063 > 0.05$, 95% CI meaning a not statistically significant relationship between partner occupation and under-five child mortality.

Table 3: Bivariate analysis of mothers' experience of child death

Independent Determinants	Under-Five Mortality			Pearson Chi-Square		
	Yes	No	Total	Value	df	p-value
Age Group (Years)						
15 - 24 years	52 (30.2%)	83 (31.2%)	135 (30.8%)	9.189 ^a	4	0.057
25 - 34 years	50 (29.0%)	104 (39.0%)	154 (35.1%)			
35 - 44 years	43 (25%)	57 (21.4%)	100 (22.8%)			
45 - 49 years	11 (6.39%)	11 (4.13%)	22 (5.02%)			
No Response	16 (9.30%)	11 (4.13%)	27 (6.16%)			
Total	172 (100%)	266 (100%)	438 (100%)			
Highest Education						
No formal	41 (23.8%)	31 (11.7%)	72 (16.4%)	27.471 ^a	7	0.000
Primary	39 (22.7%)	64 (24.1%)	103 (23.5%)			
Secondary	74 (43.0%)	119 (44.7%)	193 (44.1%)			
Tertiary	16 (9.3%)	45 (16.9%)	61 (13.9%)			
No Response	2 (1.2%)	7 (2.6%)	9 (2.1%)			
Total	172 (100%)	266 (100%)	438 (100%)			
Primary Occupation						
Civil Service	36 (20.9%)	34 (12.8%)	70 (16.0%)	6.192 ^a	4	0.185
Farming	39 (22.7%)	72 (27.1%)	111 (25.3%)			
Housewife	51 (29.7%)	78 (29.3%)	129 (29.5%)			
Trading/Business	41 (23.8%)	76 (28.6%)	117 (26.7%)			
No Response	5 (2.9%)	6 (2.3%)	11 (2.5%)			
Total	172 (100%)	266 (100%)	438 (100%)			
Average monthly income						
<N1,000	40 (23.3%)	95 (35.7%)	135 (30.8%)	19.812 ^a	4	0.001
1,001-10,000	77 (44.8%)	84 (31.6%)	161 (36.8%)			
N10,001-50,000	37 (21.5%)	72 (27.1%)	109 (24.9%)			
>N50,000	14 (8.1%)	6 (2.3%)	20 (4.6%)			
No Response	4 (2.3%)	9 (3.4%)	13 (3.0%)			
Total	172 (100%)	266 (100%)	438 (100%)			
Ethnic Group						
Fulfulde	10 (5.8%)	10 (3.8%)	20 (4.6%)	28.196 ^a	5	0.000
Hausa	71 (41.3%)	56 (21.1%)	127 (29.0%)			
Higgi	7 (4.1%)	24 (9.0%)	31 (7.1%)			
lungada	68 (39.5%)	155 (58.3%)	223 (50.9%)			
others	14 (8.1%)	15 (5.6%)	29 (6.6%)			
No Response	2 (1.2%)	6 (2.3%)	8 (1.8%)			
Total	172 (100%)	266 (100%)	438 (100%)			
Religion Affiliation						
Christianity	92 (53.5%)	190 (71.4%)	282 (64.4%)	19.848 ^a	3	0.000
Islam	75 (43.6%)	67 (25.2%)	142 (32.4%)			
Traditional	3 (1.7%)	1 (0.4%)	4 (0.9%)			
No Response	2(1.2%)	8 (3.0%)	10 (2.3%)			
Total	172 (100%)	266 (100%)	438 (100%)			

Marital Status	Yes	No	Total	Value	df	p-value
Married	148 (86.0%)	248 (93.2%)	396 (90.4%)			
Divorced	7 (4.1%)	2 (0.8%)	9 (2.1%)			
Separated	3 (1.7%)	3 (1.1%)	6 (1.4%)			
Single	1 (0.6%)	5 (1.9%)	6 (1.4%)	22.263 ^a	5	0.000
Widowed	12 (7.0%)	2 (0.8%)	14 (3.2%)			
No Response	1 (0.6%)	6 (2.3%)	7 (1.6%)			
Total	172 (100%)	266 (100%)	438 (100%)			

Spouse/Partner Occupation	Yes	No	Total	Value	df	p-value
Artisan	1 (0.58%)	3 (1.12%)	4 (0.91%)			
Civil Servant	58 (33.7%)	63 (23.6%)	121 (27.6%)			
Farming	48 (27.9%)	110 (41.3%)	158 (36.0%)	10.261 ^a	4	0.036
Trading/business	50 (29.0%)	73 (27.4%)	123 (28.0%)			
No Response	15 (8.72%)	17 (6.39%)	32 (7.30%)			
Total	172 (100%)	266 (100%)	438 (100%)			

Source: Researcher Analysis, 2017

Table 4 shows the impact of various demographic and socio economic factors on the mortality rates of under-five years old in the sample that is, the influence of independent variables like age, qualification, occupation, on the under-five mortality rate in Adamawa state.

The multinomial logistic regression analysis indicates that, of all the significant variables on bivariate analysis, only Religion has statistically significant influence on under-five mortality (Beta (β) of 1391.4^b, χ^2 506.6, p<0.005).

Age, which yielded a Beta (β) of 907.316^b, χ^2 of 22.559, was deemed to be statistically not significant (p=1.000). Thus, a change in the mother’s age will not significantly impact on the under-five mortality rate by a factor of 907.316^b

The highest level of education (Beta (β) of 896.016^b, χ^2 11.258, and p 0.998), were deemed to be not statistically significant Thus, a change in qualification will not significantly affect the under-five mortality rate by a factor of 896.016^b.

The logistic regression model analysis, mothers’ age, highest level of school attended, though not found to be statistically significant, are important predictors of under-five mortality compared to the remaining independent variables. However, religion has the highest predictive value of 1391.4 and is the only statistically significant variable (p=0.000<0.05) determinant of under five deaths. Age is the second most predictive variable after religion followed by level of education even though both variables are not statistically significant.

Table4.The results of the multinomial analysis of determinants of under-five mortality in Adamawa State

Variables	Beta coefficient	Chi-square	P<0.005
Age	* 907.3	22.5	1.000
Highest school attended	* 896.0	11.25	0.998
Primary occupation	894.6	9.8	0.999
Average income	895.8	11.0	0.998
Ethnic group	887.7	2.98	1.000
Religion	* 1391.4	506.6	0.000
Marital status	891.3	6.6	1.000
Living with partner	890.5	5.77	0.972
Partner occupation	895.7	10.97	1.000

Source: Researcher Analysis Logistic regression model

IV. DISCUSSION

This study has shown that both demographic and socioeconomic factors have profound impact on under-five mortality in Adamawa state. The mean age of the respondents was 30.8±9.0 years, with 39.3% of the mothers reporting having experienced under-five mortality of at least one of their children. This finding is high compared to a similar study in Northern Ghana in which 37.3% of the mothers had lost at least one child¹⁴. The current insurgency activities in parts of Northeast Nigeria may be contributing to the poor under-five survival found in this study.

Another study in both low and middle-income countries reported the aggregated under-five mortality rate as 64.6 deaths per 1000 live births in the poorest households¹⁵. This rate is much higher than the findings in this study This may be because it is an aggregate value for many countries put

together unlike the small geographical population area used in this study.

The age group of 15-24 years was shown in this study to be the highest contributor of child mortality and age at multinomial analysis is one of the important predictors of under-five deaths. This is in agreement with a previous finding of a study done in Delhi, that younger age of mothers (≤ 19 years) is associated with high risk of childhood mortality¹⁶. Naivety nurturing children, inadequate physical maturity and pregnancy related complications could be factors that are responsible for this trend among younger mother.

The analysis of ethnic groups showed that the experience of under-five mortality was more among the Hausas compared to the other ethnic groups. This finding is similar to another study done in Nigeria by SundayA et al which found substantial differences in under-five mortality by ethnic affiliations. For instance, the risks of death were significantly lower for children of the Yoruba and Igbo tribes and children of the minority ethnic groups compared to children of the Hausa, Fulani, and Kanuri tribes¹⁷. This can be explained by observations of better standard of living and small family size amongst the Yoruba, Igbo and minority ethnic groups compared to the Hausa, Fulani and Kanuri tribes who are known to have large family size with low standard of living.

Respondents who had primary and secondary as the highest level of education were more likely to experience under-five mortality compared to those with tertiary level of education ($p=0.007$, 95% CI). Such a similarity was also found in a study by Aristide R.B et al in some selected African countries, which showed that under-five mortality rates of children born to mothers without formal education are higher than those of children of educated mothers.¹⁸

Considering marital status, the widows and the divorcee had the highest under-five mortality followed by the divorcees ($p<0.005$, 95% CI). This finding is similar to another study done in Nigeria by Oyewale et al, others where marital status was a significant variable in influencing infant mortality.¹⁹

The husband's or partner's occupation had a profound influence on child's mortality with those whose husbands/partners were civil servants having the highest under-five mortality ($p<0.005$, 95% CI). This finding is in contrast to the findings in a study done in Uganda by Nafiu L et al where paternal occupation had no influence on under-five mortality.²⁰

Housewives had higher experience of under five deaths compared to those with other occupations ($p=0.015$, 95% CI). This is likely because housewives in the communities studied have very low level of income and are therefore unable to provide adequate nutrition and participate in health decisions concerning their under- five children. This finding is contrary to the findings of Isa N.W et al that Indonesian mothers who were working had 2.22 times risk of experiencing under-five

mortality compared with children from mothers who do not work.²¹

Those mothers with low average monthly income below the national minimum wage experienced greater under-five mortality compared to mothers whose average monthly income was higher than the national minimum wage. This agrees with the findings of a study carried out by Solomon Get alin Ethiopia which revealed that the risk of under-five mortality for a child whose mother earned less than her husband was higher by 43.9% relative to a child whose mothers earned more than her husband.²²

This study found that affiliation with the Christian religion was significantly associated with better under-five survival. This may be explained by reason of the likely fact that these participants tended to have a smaller family size and better choices to utilize health services. This finding is supported by similar studies conducted in Mozambique by Cau, M.B et al, which showed that religious affiliation has relationship with child mortality.²³ Saabneh A also found that Child mortality in Egypt was lower among Christians than among Muslims and that can be explained that may be due to differences in their socioeconomic status.²⁴ Finally, Heaton T.B also found both systematic and non-systematic differences and argued that Muslims and Traditionalists seemed to have a disadvantage in terms of wealth and education compared to other religious groups.²⁵

V. CONCLUSION

The findings in this study demonstrate that the prevalence of under-five mortality is still very high in Adamawa State, Northeast Nigeria despite interventions at various levels. Bivariate analysis revealed that the independent variables examined such as mother's age, highest level of education attained, ethnic group, religion, marital status and living with spouse or partner were significantly associated with under-five mortality. In the multivariate analysis, age, highest level of education attained and religion are significant predictors of under-five mortality, with religion having the highest predictive value 1391.4 and is the most statistically significant determinant of under five deaths ($p<0.000$).

Recommendations

There is need for government to step up efforts in improving girl child education, provide better maternal and child health services and combat the insurgency in order to reduce child mortality in Adamawa state

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