

Assessment of Poverty as a Determinant of Infant Mortality among Nursing Mothers in Rural Areas of Kaduna State, Nigeria

Hadiza Coomassie Ahmad

Kaduna State College of Nursing and Midwifery, Tudun-wada, Kaduna
hadizaahmad2313@gmail.com

¹Prof M. A. Suleiman

¹M. Sanusi, Ph.D

¹Longji Hassan

hassanlongji@gmail.com

¹*Department of Human Kinetics and Health Education*
Ahmadu Bello University, Zaria

Bilkisu Usman Kila

College of Health Technology, Makarfi, Kaduna

Abstract

The purpose of this study was to assess poverty as a determinant of infant mortality among 248 nursing mothers in rural areas of Kaduna State, Nigeria. A descriptive survey research design was used for the study. The population of the study comprised of 17,400 nursing mothers in rural areas of Kaduna State. A multi-stage sampling technique comprising of stratified, purposive, proportionate and simple random sampling was used to draw the respondents for the study. 248 copies of the researchers-developed questionnaire were distributed to the respondents, of which 246 (99.19%) were retrieved and used for the study. Descriptive statistics was used to describe the demographic characteristics of the respondents and to answer the research question. Inferential statistics of regression analysis was used to test the formulated hypotheses at 0.05 level of significance. The findings of the study revealed that poverty is a determinant of infant mortality in rural areas of Kaduna State. The study recommended that the state government and non-governmental organisations should come up with poverty alleviation programmes for rural women so as to empower them with trade and businesses that would help in reducing the poverty rate in the state.

Keywords: determinant, infant, mortality, poverty, nursing, mothers

Introduction

Infant mortality is one of the sensitive public health issues the world is facing. Despite numerous interventions, African countries including Nigeria are still faced with this gruesome health challenge. Infant mortality refers to deaths of young children, typically those less than one year of age. It is measured by the Infant Mortality Rate (IMR), which is the number of deaths of children under one year of age per 1000 live births (Centres for Disease Control and Prevention (CDC), 2012). The Under-Five Mortality Rate is also important statistics considering that the IMR has a strict limit of focusing on children only under one year of age (World Health Organization (WHO), 2008). United Nations Population Fund (UNFPA) (2014) stated that Millions of infant in developing countries experience life threatening and other serious health problems related to pregnancy or childbirth. Complications of under 5 children such as birth defect, preterm, maternal complications of pregnancy, social influence, Sudden Infant Death Syndrome (SIDS) and injuries are the top five leading causes of infant mortality which contributes over half of the 57% infant deaths that occur in African countries. It is also a fact that child death causes more deaths and disability than any other reproductive health problems (WHO, 2008).

The situation is worse in developing countries like Nigeria due to inadequate access to modern health services and poor utilization of healthcare services. This is despite government's commitment to deliver health services to the doorsteps of common people through innovative approaches, such as National Health Insurance Scheme (NHIS), National Aids Reproductive Health Survey (NARHS) and Sustainable Development Goals (SDG). The utilization of health services is still far below acceptable standard. One of the public health challenges in developing countries such as Nigeria is, therefore, to identify vulnerable groups and to provide them with needed preventive and curative health care services. According to Rutherford, Dockerty, Jasseh, Howie, Herbison, Jeffries and Hill (2009), every year, 6.6 million children below 5 years of age die of complications in the new-born period and of common childhood diseases. They also revealed that many of these deaths could be prevented by providing optimal care at health facilities (Rutherford et al, 2009). Therefore, improving the quality of facility-based health care services and making quality an integral component of scaling up interventions to improve health outcomes of new-borns and children is of utmost importance (Rutherford et al, 2009).

Nigeria, like many other developing countries particularly in Africa, is still far from reducing mortality among children to a level of 6 per 1,000 live births despite the advances in child survival strategies, highlighted most notably by the drive for universal immunization against life-threatening, vaccine-preventable diseases (UNICEF, 2019). Data from the 2008 Nigeria Demographic and Health Survey (NDHS) indicate that the infant mortality rate is 75 deaths per 1,000 live births; while

the child mortality rate is 157 deaths per 1,000 live births for the five-year period immediately preceding the survey (National Population Commission & ICF Macro, 2009). This translates to about one in every six children born in Nigeria dying before their fifth birthday (NPC & ICF Macro, 2009). This has brought about serious stress in the health sector and therefore, posed a major challenge to social and economic development and prompted government response. However, child mortality is consistently lower in urban areas than in rural areas. There is also variation in the mortality levels across zones. The North West zone to which Kaduna State belongs, has very high prevalence rate of 91 and 139 deaths per 1,000 live births for infant and child mortality respectively (NPC & ICF Macro, 2009).

Guillot and Byass (2012) categorized environmental health risks into traditional hazards related to poverty and lack of development, such as lack of safe water, inadequate sanitation and inadequate waste disposal, indoor air pollution, food contamination, occupational injury hazard, natural disasters; and modern hazards such as urban air pollution, water pollution, solid and hazardous waste accumulation, chemical and radiation hazards, infectious disease hazards, ecological changes and climate changes. About 3% of these deaths (1.7 million) are attributable to environmental risk factors and child deaths account for about 90% of the total population (FMOH, 2015).

The general standard of living and life style of people, the persisting poverty in every household, the feeble capacity of the head of the household to provide food for all the members and women and girl children of the family, and allied environmental and social factors do influence adversely the infant mortality in a community. The factors that contribute to the remote existing life styles such as the availability and utilization of medical health facilities also fall under socio-economic imperatives (Odemegwu, 2010). The conditions of housing, road development, access and quality of health services and some maternal characteristics (ignorance, low education and malnutrition) have been documented among the determinants of infant mortality. Among the cultural factors, the subordinate position of women, ethnic discrimination and other factors related to community participation, income, institutional fragility and the social and economic development have also been identified (Ladipo, 2008).

Chambers (2006) defined poverty as lacking sufficient money to live a comfortable or normal life. Poverty, based on this study, is referred to as the inability of rural women to have enough finance to seek and provide optimal healthcare for their children. Poverty has been reported by some scholars as a determinant of maternal mortality. Lanre-Abass (2008) conducted a study on poverty and maternal mortality in Nigeria. The study revealed that poverty is also a major cause of maternal mortality, as it prevents many women from getting proper and adequate medical attention. *Pekular*

(2019) conducted a study on efforts to improve the maternal mortality rate in Malawi, and reported that there are several causes related to the high maternal mortality rate in Malawi among which poverty is one of the major contributing factors. Given that half of the country's population lives in poverty, most women cannot afford conventional health care. Bello and Joseph (2014), in their study which assessed determinants of child mortality in Oyo State, Nigeria, reported that among other factors, poverty is one of the major determinants of child mortality in the state. Worku and Woldeesenbet (2015) also reported that although many African economies have achieved substantial economic growth over the past recent years, yet several of the Millennium Development Goals (MDGs) including those concerned with health, remain considerably behind target. Worku et al. (2015) also pointed out that poverty is strongly associated with all health outcome differences in Africa especially on the life expectancy at birth. Income inequality is associated with only one of the four indicators (IMR, $cc = 0.14$; U5MR, $cc = 0.07$; MMR, $cc = 0.22$; life expectancy at birth, $cc = -0.49$).

Infant mortality has been a major issue attracting concern across the world. Little wonder why one of the goals of the Sustainable Development Goals (SDGs) 2030 agenda is to end preventable deaths of new-borns and children under 5 years of age. Globally, all countries aim to reduce neonatal mortality to the barest minimum in live births (SDGs, 2015). The researchers observe that infant mortality is on the increase especially among infants in rural areas of Kaduna State. Despite the increasing support and growing health care facilities in the state, health care services aimed at reducing the morbidity and mortality rates of children through the free medical care adopted for new born babies and children of under five years made available in the state public hospitals, the death tolls keep increasing steadily. The researchers observed that most of the rural nursing mothers are not engaged in trade or any payable work. This is as a result of most women being uneducated and the few works available in the rural areas are jobs that are mainly for the educated and literate. Poverty as it is, is the main reason why most of them fail to report cases of ailment to the hospitals because of the financial constraints to meet up with the medical bill. It is in line with the aforementioned problems that the researchers embarked on the study to assess poverty as a determinant of infant mortality among nursing mothers in rural areas of Kaduna state, Nigeria.

Research question

1. Does Poverty determine infant mortality among nursing mothers in the rural areas of Kaduna State of Nigeria?

Hypothesis

Ho1: Poverty is not a significant determinant of infant mortality among nursing mothers in rural areas of Kaduna State, Nigeria.

Methodology

This study employed a descriptive survey research design. The population of the study comprised of all nursing mothers of infants attending primary health care centres in rural areas of Kaduna State. According to Kaduna State Primary Health Care Board (2018), there were seventeen thousand and four hundred (17,400) registered mothers of infants attending primary health care centres for their post natal care services in rural areas in Kaduna state as at the time of this study. The sample size of the respondents used for this study is 248. To compose the sample, a multi stage sampling techniques comprising of stratified random sampling technique, purposive sampling technique, proportionate sampling and simple random sampling technique was used. At stage one, the researchers stratified Kaduna State into the three (3) already existing strata which are Kaduna North, Kaduna Central and Kaduna South which formed Zone 1, Zone 2 and Zone 3 respectively. In stage two, the researchers purposively selected only primary health care centres in rural areas in each of the 3 strata; in stage three, the researchers employed a proportionate sampling technique to select the healthcare centres for the study.

To determine the proportion of healthcare centers to be used per strata, the researchers divided the number of Primary HealthCare Centre (PHC) at each strata of the state by the total number of PHCs in the state and multiplied it by the sample size (248). Five (5) Primary Health Care Centres were selected from Zone One (1) and Two (2), while Seven (7) Primary Health Care Centres were selected in Zone Three (3). This brought about a total number of seventeen (17) Primary HealthCare Centres. In stage four, simple random sampling technique was used to select rural nursing mothers who reported for postnatal services at the health care facilities selected for the study. The researchers randomly selected the respondents at the healthcare facilities using the balloting method. The researchers wrote 'Yes' and 'No' on pieces of paper, folded them and dropped them in a container, shook the container and distributed to the nursing mothers. Those who picked "Yes" were then issued the copies of the questionnaire for filling which was collected back at the spot after it was filled.

The research instrument used for this study was researchers-developed close-ended questionnaire titled "Assessment of determinants of infant mortality among mothers in rural areas of Kaduna State, Nigeria". The questionnaire consisted of seven (7) sections which measured the determinants of infant mortality among mothers in rural areas of Kaduna State. To score the responses of the respondents a four (4) point modified Likert scale rating was used. Strongly agree (SA) four points, Agree (A) three points, Disagree (D) two points and Strongly disagree one point. Cronbach alpha

reliability test was used to ascertain the reliability of the research instrument. Consequently, a general reliability of 0.835 was obtained. Descriptive statistics of frequency, percentage and mean score was used to describe the demographic information of the respondents and to answer the research question; while inferential statistics of linear regression statistics was used to test the hypotheses at 0.05 level of significance.

Presentation of results

Table 1: The demographic characteristics of the mothers

S/No	Items	Frequency	Percentage
1.	Age		
	1. 18 – 25yrs	86	35.0
	2. 26 – 35yrs	88	35.8
	3. 36 – and above	72	29.3
	Total	246	100%
2.	Marital status		
	1. Single	0	0
	2. Married	242	98.4
	3. Separated/divorced	4	1.6
	Total	246	100%
3.	Level of education		
	1. Non Formal Education	54	22.0
	2. Primary Education	36	14.6
	3. Secondary Education	81	32.9
	4. Tertiary	75	30.5
	Total	246	100%
4.	Occupation		
	1. Full time Housewife	120	48.8
	2. Farming	35	14.2
	3. Petty Business	48	19.5
	4. Health Workers	9	3.7
	5. Civil Servant	34	13.8
	Total	246	100%

Table 1 revealed that on the age of the mothers of the respondents, a total of 86 (35.0%) are from 18-25years old, while 88 (35.8%) are within the range of 26-35years old and the remaining 72 (29.3%) of the respondents were 36 years old and above. Mothers who are within the age range of 26-35years were higher in number among the respondents. The marital status of the respondents show that 242 or 98.4% of the respondents are married and the remaining 4 (1.6%) are separated/divorced. Most of

the respondents are married. On level of education of the respondents, a total of 54 (22.0%) had non-formal education, while 36 (14.6%) possess primary level of education, as against 81 (32.9%) that possess secondary level of education while the remaining 75 (30.5%) of the respondents possess tertiary level of education. The respondent's with secondary level of education were more in number. On occupation of the respondents, the table shows that 120 or 48.8% of the respondents are housewives while 35 (14.2%) are into farming; 48 or 19.5% are into petty business as against 9 (3.7%) who are health workers; while the rest, 34 (13.8%) of the respondents said they were civil servant. Full time housewives were more among the respondents.

Research question: Does Poverty determine infant mortality among nursing mothers in the rural areas of Kaduna State of Nigeria?

Table 2: Mean score of responses on poverty as a determinant of infant mortality

S/NO	Items	Response categories				Mean	Rank
		SA	A	D	SD		
1	Poverty causes infant mortality among women	233	4	0	9	3.87	1
2	The inability of my husband to secure a job caused the death of my child	77	99	33	37	2.88	4
3	Poverty leading to not taking care of infant can determine infant mortality	64	130	29	23	2.96	3
4	Lack of money to buy necessary infant syrup leads to infant mortality	116	122	7	1	3.43	2
5	Lack of eating good food by the mother leads to infant mortality	27	67	63	89	2.13	5
Cumulative Mean						3.05	

Details emanating from table 2 revealed that poverty is a serious determinant of infant mortality among nursing mothers in rural areas of Kaduna State. This is because the cumulative mean response of 3.05 is above the 2.50 standard/decision mean. Specifically, most of the respondents were of the opinion that poverty causes infant mortality among women as this had the highest mean agreement of 3.87. Also, lack of money to buy necessary infant syrup leads to infant mortality as this attracted the second highest mean agreement level of 3.43. In summary, poverty is a determinant of infant mortality among mothers in rural areas of Kaduna State, as it is believed that

poverty causes infant mortality among women and lack of money to buy necessary infant syrup leads to infant mortality.

Ho1: Poverty is not a significant determinant of infant mortality among nursing mothers in rural areas of Kaduna State, Nigeria.

Table 3: Regression analysis on Poverty as a determinant of infant mortality among mothers in rural areas of Kaduna State

S/NO	Model	Sum of Squares	Df	Mean Square	F	Sig.
1.	Regression	29354.007	1	29354.007	1926.981	.000b
	Residual	3716.891	244	15.233		
	Total	33070.898	245			

a. Dependent Variable: Infant _ mortality

b. Predictors: (Constant), Poverty

Model Summary

Model	R	R ²	Adj. R ²	SEE.	R. Change	S. Std. C/R	Chng. Start	p
1	.942a	.888	.887	3.90297	.888	3.00	F/C df2 1926.981 244	df1 1 .000

a. Predictors: (Constant), Poverty

Coefficient

Model	Unstandardized Coefficient		Standardized Coefficient	T	Sig.
	B	Std. Error	Beta		
1.(Constant)	29.384	1.448	.942	20.287	.000
2. Poverty	3.463	.079		43.897	.000

a. Dependent Variable: Infant_ mortality

Results on Table 3 showed that poverty as a determinant of infant mortality among nursing mothers in rural areas of Kaduna State is significant. Reason being that in the regression statistics, the calculated p-value of 0.000 is lower than the 0.05 alpha levels and its corresponding computed F-value of 983.535 is higher than the 3.00 critical F-value. The model summary statistics showed that the strength of the influence of poverty on infant mortality is high; this is because the computed values of R- Square

and Adjusted R-square values of 0.888, and 0.887 respectively is each higher than the standard R value of 0.942. The result of the Coefficient statistics showed that the Model for predicting infant mortality from given values Poverty is possible using the Regression formula of $Y = a + b x$ where a is the intercept, b is the slope of the line and x is given values of Poverty and Y is dependent variable infant mortality. Therefore the null hypothesis which states that poverty is not a significant determinant of infant mortality among mothers in rural areas of Kaduna State, is hereby rejected. This is because poverty is a determinant of infant mortality among nursing mothers in rural areas of Kaduna State.

Discussion of the findings

The finding of the study with respect to hypothesis one reveals that, there is a positive significant correlation between poverty and infant mortality. This is represented by the p-value of $p=0.00$. The table also revealed a significantly positive standardised coefficient (.942) which revealed that when poverty increases infant mortality also increases in the population. With regards to poverty as a determinant of maternal mortality, the findings of this study is in line with the findings of Lanre-Abass (2008), who conducted a study on poverty and maternal mortality in Nigeria. The study reported that poverty is also a major cause of maternal mortality, as it prevents many women from getting proper and adequate medical attention due to their inability to afford good antenatal care. This study thus examines poverty as a threat to human existence, particularly women's health. The finding of the study is also in consonance with the study conducted by Bello and Joseph (2014), which assessed determinants of child mortality in Oyo State, Nigeria. They reported that, among other factors, poverty is one of the major determinants of child mortality in the state. The study by Worku and Woldesenbet (2015) is also in consonance with this study as it also reported that poverty is strongly associated with all health outcome differences in Africa.

More so, the finding of this study is in agreement with the findings of a study by Pekular (2019), who conducted a study on efforts to improve the maternal mortality rate in Malawi. The study reported that there are several causes related to the high maternal mortality rate in Malawi. Poverty is one of the main contributing factors. Given that half of the country's population lives in poverty, most women cannot afford conventional health care. The majority of the population live in remote, rural areas, making it difficult for mothers to find access to quality maternal health care. In many cases, they cannot travel long distances on foot to the nearest available clinic.

Conclusion

On the basis of the outcome of the study, it was concluded that rural women identified poverty as a determinant of infant mortality. More so rural women attributed infant mortality to poverty. The inability of the husband to secure a job or provide financially for the family, and lack of money to buy necessary medicines such as infant syrup were pointed out by the rural women as causes of infant mortality. From the test of the hypothesis, it was revealed that there is a positive correlation between poverty and infant mortality.

Recommendations

On the basis of the findings of this study, the following recommendations are hereby put forward:

1. Health educators in collaboration with health care providers should carry out awareness among the rural women through health talks and community outreach so as to enlighten the rural women on issues relating to infant mortality and its determinants.
2. The state government and non-governmental organisations should come up with poverty alleviation programmes for rural women so as to empower them with trade and businesses that would help in reducing the poverty rate in the state.

References

- Bello, R. A. & Joseph, A. I. (2014). Determinants of child mortality in Oyo State, Nigeria. *African Research Review*, 8(1), 252-272.
- Centres for Disease Control and Prevention (2012). *Infant mortality rates, foetal mortality rates, and perinatal mortality rates by race*. Retrieved online on 15th March, 2019 from <https://www.cdc.gov/nchs/data/hus/2012/013.pdf>.
- Chambers, R. (2006). *What is poverty?* Retrieved on 15th March, 2019 from <https://opendocs.ids.ac.uk/opendocs/handle/20.500.12413/120>.
- Federal Ministry of Health (FMOH) (2015). *Road map for accelerating the attainment of the millennium development goals related to maternal and new-born health in Nigeria*. Abuja: FMOH.
- Guillot, M. & Byass, P. (2012). *Child mortality estimation: a global overview of infant and child mortality age patterns in light of new empirical data*. *PLoS Med.*, 9(8). <https://doi.org/10.1371/journal.pmed.1001299>
- Kaduna State Primary Health Care Board (2018). *Primary Healthcare workforce*. Retrieved from the Primary Health Care Board on 15th March, 2019.
- Ladipo, O. A. (2008). *Delivery of an Effective Maternal and Child Health Services in Nigeria*. Retrieved on May 20, 2011 from <http://www.ngnhc.org/>.

- Lanre-Abass, B. A. (2008). Poverty and maternal mortality in Nigeria: towards a more viable ethics of modern medical practice. *International Journal for Equity in Health*, 7(1), 1-9.
- National Population Commission (NPC) & ICF Macro. (2009). *Nigeria Demographic and Health Survey 2008*. Abuja, Nigeria: NPC/Nigeria and ICF Macro. Retrieved on 12th January, 2019 from <https://dhsprogram.com/pubs/pdf/fr222/fr222.pdf>.
- Odemegwu, I. (2010). Averting Maternal Mortality in Nigeria. Retrieved on 19/05/2017 from <https://thewillnigeria.com>
- Pekular, M. (2019). *Efforts to Improve the Maternal Mortality Rate in Malawi*. Retrieved on 20th October, 2019 from <https://borgenproject.org/maternal/>
- Rutherford, M. E., Dockerty, J. D., Jasseh, M., Howie, S. R., Herbison, P., Jeffries, D. J., ... & Hill, P. C. (2009). Access to health care and mortality of children under 5 years of age in the Gambia: a case-control study. *Sci Elo*, 87(3), 216-224.
- Sustainable Development Goals (SDGs) (2015). *Child Survival and the SDG, Looking ahead: Child survival and the Sustainable Development Goals*. Retrieved on 10th June 2019 from <https://data.unicef.org/topic/child-survival/child-survival-sdgs/>
- United Nations Population Fund (UNFPA) (2014). *Infant Mortality*. Retrieved on 28/05/2017 from www.cdc.gov/reproductivehealth/infant/
- United Nations International Children Education Fund (UNICEF) (2019). *Under-five Mortality*. Retrieved on 3rd February, 2019 from <https://data.unicef.org/topic/child-survival/under-five-mortality/>
- Worku, E. B. & Woldeesenbet, S. A. (2015). Poverty and inequality—but of what—as social determinants of health in Africa? *African health sciences*, 15(4), 1330-1338.
- World Health Organization, (2008). *Meningococcal disease in Nigeria – update March 4, 2009*. Retrieved online on 3rd February, 2019 from https://www.who.int/csr/don/2009_03_04/en/.