



ASSESSMENT OF THE CAUSES OF INFANT MORTALITY IN UYO LOCAL GOVERNMENT AREA, AKWA IBOM STATE

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(Received 11 April 2022, Revision Accepted 16 August 2022)

ABSTRACT

This study assessed infant mortality in Uyo Local Government Area, Akwa Ibom State with the aim of investigating the causes of infant mortality and examining the contribution of the health professionals in curbing infant mortality in the study area. To achieve these objectives, structured questionnaires were employed. Through the use of the structured questionnaires, data were obtained through systematic random sampling of 399 households along three major zones selected for the study in Uyo Local Government. The hypothesis for the study was tested with regression model using the multiple factors Regression Analysis. The results indicated that non-parental factors such as hereditary neonatal disorders and premature birth are the driving causes of infant mortality in the study area. The study also indicated that the contributions of health professionals are positively felt in the study area. The study concludes that infant mortality is due to preventable non-parental factors. The study recommended that the action to ensure access to quality care and ensuring that no mother or new born dies from a preventable cause must be an urgent priority for every Government.

KEYWORDS –Infant, Mortality, Causes, Assessment and Health Professions

INTRODUCTION

In assessing infant mortality in under-developed, developing and developed countries of the world, lack of access to health care before, during and after delivery contributes to high infant mortality rates both in developing and under-developed country (WHO, 2017).

Despite the progress in reducing infant mortality over the past decades, according to studies done from 56 countries, infant mortality was one of the global public health concern and accounts for 144 deaths per 1000 live births. Globally, in 2017, half of all deaths under 5 years of age took place in sub-Saharan Africa, and another 30 percent in Southern Asia (UNICEF, 2018). The global

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burden of under-five deaths weighs most heavily on just two regions. About 53 percent of all under-five deaths in 2019 (2.6, 2.8 3.1 million) occurred in sub-Saharan Africa, and roughly (1.4, 1.5, 1.6 million) children died in 2019 before reaching age 5 in Central and Southern Asia. These two regions alone accounted for more than 80 percent of the 5.2 million global under-five deaths in 2019, but they only accounted for 52 percent of the global under-five population. Nearly half (49 percent) of all under-five deaths in 2019 occurred in just five countries: Nigeria, India, Pakistan, the Democratic Republic of the Congo and Ethiopia. Nigeria and India alone account for almost a third (UN-IGME child mortality report, 2020). With Nigeria's demographics: very high population of 201 (UNPF, 2019), global poverty capital (Brookings Institution, 2018), one of the eight global hungriest (UN, 2019) and very high maternal and infant mortality rates (UNICEF, 2017), Nigeria has attracted considerable policy attention. Infant mortality rates reflect economic and social conditions for the health of mothers and newborns, as well as the effectiveness of health systems (OECD, 2011). The causes of infant mortality are strongly correlated to structural factors, like economic development, general living conditions, social wellbeing, and the quality of the environment, that affect the health of entire populations. (Reidpath and Allotey, 2003). It is on this score that the research was initiated to assess infant mortality in Uyo Local Government Area, Akwa Ibom State.

Statement of Problem

Increase in Infant mortality in sub-Saharan Africa rate results from lack of accessible health facilities, health personnel's and vaccines is becoming worrisome. Infant mortality revolves around primary care and primary healthcare inadequacies, and are largely poverty, illiteracy, and unemployment driven, generally centering on low maternal welfare. It generally manifests childhood stunting due to household poverty induced malnutrition (Okwuwa, et al., 2020). Lack of prenatal care, alcohol consumption during pregnancy, and drug use also cause complications which may result in infant mortality.

However, the focus of this research was to assess infant mortality in Uyo Local Government Area, Akwa Ibom State.

Research Objectives

The research aims at assessing infant mortality in Uyo Local Government Area, Akwa Ibom State. The specific objectives were to:

1. Investigating the causes of infant mortality in Uyo Local Government Area.
2. Examine the contribution of the health professionals in curbing infant mortality in Uyo Local Government Area.

Research Hypothesis

H₀: Non-parental factors are the driving causes of infant mortality

H₁: Parental factors are the driving causes of infant mortality

Study Area

Uyo Local Government Area, is the state capital of Akwa Ibom State. It is central to other Local Government Areas and almost equidistant and easily accessible from all the other parts of the State. It is found approximately between latitude $4^{\circ} 52^1$ and $5^{\circ} 01^1$ N and Longitude $7^{\circ} 47^1$ E and $8^{\circ} 03^1$ E of the Greenwich meridian. It covers a land area of about 296km. Also, the area is located on an elevation of about 60.96 metres (2090ft) above sea level. The area consists of level-to-gently undulating sandy plains where rivers are few and far between. Agriculture and the road network are also adversely affected. Soil erosion has intensified considerably especially where gullyng takes place. The drainage network in the upland part of Uyo is not dense, as rivers are few and distant apart with wide interfluves. Only one major river, the Qua Iboe River, traverses the entire State from north to south. A major tributary of the Cross River, the Enyong Creek, drains the highly dissected terrain in Ikono, Ibiono and Itu. Since 1973, the census figure had been rejected, the only official sources remained 1953, 1963, 1991 and the current 2006 census. The population of Uyo has been increasing greatly since 1931 from 743 to 3920208 (population density of 6336) in 2006 (NPC, 2006).

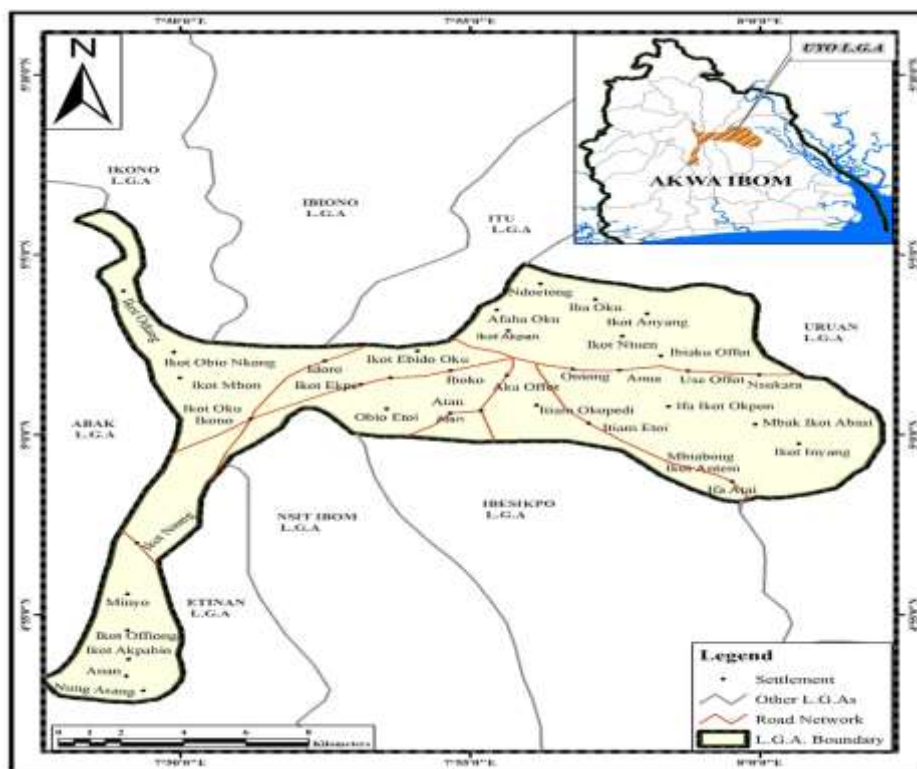


Figure 1 –Uyo Local Government Area (Study Area)

Conceptual Clarification - Mosley and Chen Conceptual Framework for The Study of Child Survival in Developing Countries.

Mosley and Chen Conceptual Framework of 1984 explained the explanatory variables to include community level distal socioeconomic, the household and individual level socioeconomic determinants and proximate determinants, covering maternal, infant, pre-natal, delivery, and post-natal factors in line with conceptual framework of study.

Community level socioeconomic determinants

People living in municipalities including towns and the capital city were considered as urban people and people living in villages or rural areas were considered as rural people. Development regions covered five administrative regions while ecological regions covered Mountain, Hill and Terai ecological zones (Mosley and Chen 1984).

The household and individual level socioeconomic determinants

In this study, the main socioeconomic determinant is household wealth quintile (index). It is a method developed by the ORC Macro to

measure the socioeconomic level for a household in a ranked order. It uses principal-component analysis based on respondents' household assets, amenities, and services (Rutstein and Johnson, 2004). In the 2011 NDHS, this variable covered information on material possessions (e.g., television, bicycle car), as well as dwelling characteristics such as source of water, sanitation facilities and type of material used in flooring (Rutstein and Johnson, 2004). The individual's rank is based on their household score and divided into quintiles where the first quintile is the poorest 20 % of the households and fifth quintile is the wealthiest 20 % of the households (Howe, Hargreaves and Huttly, 2008). Similarly, categorical or ordinal variables; no formal school education, primary education, secondary education and higher education are used for mother's and father's education level. The other variables consist of sex of the child, ethnicity and religion of mother. Ethnic/caste groups with similar characteristics are categorized. Religion of the mother is categorized into two categories: Hindu and others (Buddhist, Christian, Kirat, and Muslim). Age of mother, while giving childbirth is categorized into two groups (less than 20 and 20 year to 35 years of age).

The intermediate or proximate determinants

The proximate determinants include birth size, birth order and previous birth interval. Size at birth (very small, small, average size, large or very large) was obtained by asking mothers. Birth rank was categorized into three groups: first, 2–3 birth rank and 4+ birth rank. The preceding birth interval was grouped into two groups: less than 2-year and two or more years. These two variables are combined into one variable with categories (Titaley, Dibley, Agho, Roberts, Hall 2008). First rank, 2–4 birth rank with 2-years or more of preceding spacing, 2–3 birth rank with less than 2-years of preceding spacing, 4th or more birth order with 2-year or more of preceding spacing and 4+ birth rank with less than 2-years of preceding spacing.

The Mosley and Chen conceptual framework for the study of child survival in developing countries is very important as a framework for understanding the factors involved in family production of healthy children in order to help in policies making towards the reduction of infant mortality.

METHODOLOGY

Sampling Method

In carrying out this study, data were derived from primary source of data. The primary data involved the first-hand information collected in the field by the researchers with the use of questionnaire, personal interviews and field observation. A validated structured questionnaire was administered which contains questions related to the study problems, direct interviews were conducted with residents in household. The target population for this study comprised of 399 households selected for the study which is as a result of selecting a total number of 133 households in each zone. This selection is based on the three zones in Uyo Local Government Area; zone A (covering major streets along Ikot Ekpene Road and Wellington Basseway), zone B (covering major Roads along Aka Road and Abak Road) and zone C (covering major road along Nwaniba and Oron Road). Following a Systematic random technique, an interval of 1072th was obtained from dividing in a population of 472, 873 by the

desired sample size of 399. Hence, the starting point was 56th household, this was picked between 1 and 1072.

Methods of Data Analysis

The multiple linear regression analysis model is used to test to ascertain that parental and non-parental factors explain infant mortality. The Microsoft Excel version 016 is used to conduct the statistical analysis. The t-test statistics is used for the inferential regression model. The significance level for the inferential statistics are at a 99% significance level and a confidence interval of 0.01 for a two tailed test. The dependent variable is infant mortality while the independent variables are Birth complication, Drug intake, Hereditary neonatal disorders and diseases in infant these were the predictor variables. This technique was used because households had equal chance of being selected. The study adopted both descriptive and inferential approach of data analysis. The descriptive approach involves the use of table, figures, charts and simple percentage in answering the research questions while the inferential statistics (Regression model using the multiple factors Regression Analysis) was used to test for the hypothesis.

Ethical Considerations

Certain ethical issues were considered in this study. Firstly, the respondents in the survey were voluntary respondents; there was no use of force or threats to get information. The questionnaires were designed in such a way that a letter of introduction of the study and researcher preceded the questions. The letter showed the identity of the researchers, as well as the intendment of the research, leaving the participant with the choice to either answer the questions or decline. In order to guarantee confidentiality, the questionnaires were designed in such a way that the respondents did not indicate their names and specific addresses but community names were used. The questionnaires were designed in such a way that options or possible answers were presented to the respondents to choose from and tick as appropriate.

PRESENTATION OF RESULT**Table 1: Causes of Infant Mortality**

Month/year	Infant Mortality Rate	Birth complications	Positive Alcohol/drug use	Hereditary Neonatal disorders	Diseases in infant (Malaria, respiratory, pneumonia)	in lower
Aug-20	59	32	24	12	39	
Sep-20	45	43	18	18	39	
Oct-20	48	29	22	21	37	
Nov-20	62	34	18	22	32	
Dec-20	58	37	17	33	24	
Jan-21	60	40	29	17	19	
Feb-21	57	39	27	24	21	
Mar-21	47	37	15	19	43	
Apr-21	56	32	37	21	29	
May-21	63	39	32	31	34	
Jun-21	54	40	17	14	37	
Jul-21	48	41	10	26	28	
Aug-21	49	28	23	13	47	
Sep-21	61	47	26	32	32	
Oct-21	57	32	32	19	32	
Nov-21	55	34	17	13	18	
Dec-21	57	38	22	17	18	

Source: Researchers Field Data (2021)

Table 1 indicated that Non-parental factors include, Hereditary Neonatal Disorders, Premature Birth, Infant Diseases such as Asphyxia, Bronchopneumonia, Malaria etc, and

Mother Drug/Alcohol use. The parental variables being Alcohol use and Hereditary Neonatal Disorders and the Non-Parental factors being, Premature Birth and Infant Diseases.

Table 2: Contributions of The Health Professions in Curbing Infant Mortality

Contributions	Zone 1	Zone 2	Zone 3	Total	Percentage
Modifying the home environment	37	39	38	114	28.6
Implementing Social Programs	24	26	35	85	21.3
Educating Mothers	72	68	60	200	50.1
TOTAL	133	133	133	399	100

Source: Researchers Field Data (2021)

From table 2, the bulk of contributions of health professions in curbing infant mortality was in educating mothers on how best feed and care for their children accounted for 50.1% households. Households that asserted that health professionals modify the home environment to

improve living conditions made up 28.6% and those that entirely supported that health professionals implement social programs use public water scheme account for 21.3%. Multiple linear regression was used to test if Parental and Non-Parental Factors explains

infant mortality. The overall regression was statistically significant ($R^2 = 0.25$, $F(4, 13) = 1.09$, $p < .02$)

The R square value of 25% shows that the independent variables explain about $\frac{1}{4}$ of the dependent variable of infant mortality. The model is statistically significant as the Sig F is less than

.000, thus the model is statistically appropriate to assess the predictive capabilities of the independent variables. The p values of the independent variables are all below .000 this shows that they are significant at the 99% confidence level.

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.501364707							
R Square	0.251366569							
Adjusted R Square	0.021017821							
Standard Error	6.786527274							
Observations	18							
ANOVA								
	df	SS	MS	F	Significance F			
Regression	4	201.0373961	50.25934902	1.091243479	0.000401187			
Residual	13	598.7403817	46.05695244					
Total	17	799.7777778						
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	54.35907528	20.6600222	2.63112376	0.020743059	9.72581088	98.99233967	9.72581088	98.99233967
Birth complications	3.78	0.286500965	11.3222	0.004777375	-0.828385301	0.40951011	-0.828385301	0.40951011
Diseases in infant	11.20342	0.264016883	1.9774	9.94624E-06	-0.572187341	0.568560257	-0.572187341	0.568560257
Positive Alcohol/dr	2.00741	0.096881818	1.039525446	0.000317509	-0.108589328	0.310011558	-0.108589328	0.310011558
Hereditary neonatal	0.877	0.23977929	1.296187124	2.1745E-05	-0.828810493	0.207212835	-0.828810493	0.207212835

We accept the null hypothesis that Non-Parental Factors are the major causes of Infant Mortality because F value of the Regression of 0.40 analysis is greater than 0.05. This also indicates that Regression model for our data analysis is reliable and statistically significant.

DISCUSSION OF FINDINGS

Analysing the variables individually, considering Infant Disease we can interpret that for each 1 case of birth complication recorded, the Infant Death rate would go up by 3, for each additional case of Positive Drug use, we should expect a 2 cases of infant death rate, for each case of Hereditary Disorder

recorded at birth, we should expect about 1 case increase in the infant mortality rate. Whereas the Alcohol and drug usage during pregnancy is not statistically significant. Thus, we see that the combinations of the Non-parental factors of Birth complications and infant diseases are most dominant as factors causing infant mortality thus, we can confidently at 99% confidence level accept the null Hypothesis that Non-parental

factors are the driving causes of infant mortality. This is in line with the studies of Loafman, Zhang and Cherella (2009), who through their study indicated that there are important practices that are shaped by socio economic and environmental influences associated with infant mortality. For example, maternal stress is correlated with premature delivery and lower birth weights both of which are leading causes of infant mortality.

From the analysis, health professions contributed more in educating mothers on how best feed and care for their children. This accounted for 50.1%, followed by modifying the home environment to improve living conditions which accounted for 28.6% and lastly, they curb infant mortality through implementation of social programs to provide clean milk and food for families who could not afford it accounted for 21.3%. According to The International Council of Nursing (2010), nurses are concerned with the "... advocacy [and] promotion of a safe environment, research, participation in shaping health policy and in patient and health systems management,

and education. ...”to improve the health and wellbeing of others. Nursing has made a substantial contribution of research in health-related concerns of vulnerable populations (Flaskerud, et al., 2002).

CONCLUSION

The study has shown that most of the causes of the infant mortality are due to preventable non-parental factors. This basically boils down to external factors that are hospital based which implies that an upgrade to these factors can go a long way to reduce the mortality. Also, health-care workers are playing a crucial role in the provision of quality care to prevent newborn mortality and stillbirths. From the literature review and analysis, professionalizing and scale up maternity and new born care is urgent. If a sufficient number of properly trained and well-supported nurses and midwives were available, 83 per cent of maternal deaths, stillbirths and neonatal deaths could be prevented. Increasing investments in health workers will be just as critical to how countries respond to COVID-19 as it is to safeguarding access to essential primary and quality health care for every infant. The role of health workers towards curbing infant mortality is as important as the role of every other institution towards the development of every nation. When complications arise during labour and delivery or when a baby is born small or sick, a trained health worker can be the difference between life and death for babies.

RECOMMENDATIONS

1. Good quality midwifery care should be put in place to improve multiple other health outcomes, such as increased breastfeeding initiation and duration, and reductions in caesarean sections, maternal infections, postpartum haemorrhage and preterm births. The essence of addressing these problems is to speedily enhance the work of health practitioners in curbing infant mortality. This will require investment in a skilled health workforce, particularly nurses and midwives, that ensures they can work in clean, functional health facilities with the proper equipment, vaccines, medicines and nutritional supplements needed to care for mothers and newborns.

2. Action to ensure access to quality care must be an urgent priority for every Government, ensuring progress gained are maintained and continued towards a world with universal health coverage where no mother or newborn dies from a preventable cause.

REFERENCES

- Brookings Institution, 2018. Poverty in Africa is falling, but not fast enough. www.brookings.edu Flaskerud JH, Lesser J, Dixon E, Anderson N, Conde F, Kim S, Verzemnieks I. Health disparities among vulnerable populations: Evolution of knowledge over five decades in nursing research publications.
- Nursing Research. 2002;51(2):74–85. [PubMed] [Google Scholar]
- Howe, Hargreaves, Huttly, 2008. Issues in the construction of wealth indices for the measurement of socio-economic position in low-income countries. *Emergency Themes Epidemiology* 5(3). doi: 10.1186/1742-7622-5-3.
- Loafman, Zhang and Cherella, 2009. Addressing psychosocial determinants of poor birth outcomes: enhanced screening in family medicine obstetrics. *Am J Clin Med.* 6(2):58–64.
- Mosley and Chen, 1984. An analytical framework for the study of child survival in developing countries. *Pop. Dev. Rev.* 10:25–45.
- National Population Commission and ICF Macro, 2009. Nigeria Demographic and Health Survey 2008. Abuja, Nigeria: National Population Commission and ICF Macro.
- OECD, 2011. *OECD Factbook 2011–2012: economic, environmental and social statistics.* Paris: Organisation for Economic Co-operation and Development; 2011. p. 268.
- Okwuwa, Charles Onuora and Adejo, Simon M., 2020. Infant Mortality, Access to Primary Health Care and Prospects for Socio-Economic Development in Bwari Area Council of Niger State, Nigeria. *Journal of International Women's Studies*, 21(1), 289-308.
- Reidpath D, Allotey P., 2003. Theory and methods of infant mortality rate as an indicator of population health. *J Epidemiol Community Health.* Pg. 57:344–6.

- Rutstein and Johnson K., 2004. The DHS Wealth Index. DHS comparative reports no. 6. Calverton, Maryland: ORC Macro.
- The International Council of Nurses. Definition of Nursing. 2010 Apr 12; Retrieved from <http://www.icn.ch/about-icn/icn-definition-of-nursing/>Titaley, Dibley, Agho, Roberts, Hall, 2008. Determinants of neonatal mortality in Indonesia.
- BMC Public Health 8(232). doi: 10.1186/1471-2458-8-232
- UN, 2019. Two-thirds of world's hungriest live in Nigeria. Premium Times, 3rd April. www.premiumtimesng.com.
- UNPF, 2019. UN: Nigeria's population now 201m, Thecable.ng retrieved 17, May 2019
- UNICEF, 2017. Nigeria has 3rd Highest Infant Mortality in the World. <http://unicef.org/Nigeria/>
- UNICEF, 2018. Child mortality-Unicef Data. <https://data.unicef.org> correct. United Nations Inter-Agency Group for Child Mortality Estimation (UNIGME), 'Levels and Trends in Child Mortality: Report 2020, Estimates developed by the United Nations Inter-agency Group for Child Mortality Estimation', United Nations Children's Fund, New York, 2018.
- WHO, 2017. Infant Mortality. <https://www.who.int/mediacentre/factsheets/fs104/> Wikipedia, The Free Encyclopaedia, retrieved 15/5/2018?
- WHO, 2018. and United Nations Children's Fund (UNICEF), A Vision for Primary Health Care in the 21st Century: Towards universal health coverage and the Sustainable Development Goals, Geneva, 2018.