DETERMINANTS OF INFANT MORTALITY IN URBAN CENTRES IN NIGERIA

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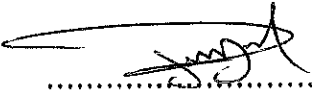
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i

CERTIFICATION

This is to certify that STEPHEN, UGOCHUKWU OZOR of the Department of Demography and Social Statistics, Faculty of Social Sciences carried out a research on the topic "Determinants of Infant Mortality in Urban Centres in Nigeria" in partial fulfillment of the award of Bachelor of Science (B.Sc.) in Federal University Oye-Ekiti, Nigeria under my supervision:

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DATE

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EXTERNAL EXAMINER

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DATE

ii

DEDICATION

The project is dedicated to all the women in Nigeria who have gone through the pain of losing a child.

ACKNOWLEDGEMENT

In the course of this research, many people gave both material and emotional support that led to its completion. First of all, my primary indebtedness is to my supervisor, Dr. Gbemiga Adeyemi for the wonderful role he played in guiding and directing this work from its conceptualization to its actualization. More thanks are due to him than can be conveyed here for his professional and fatherly support at every stage of this work.

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I sincerely extend my appreciation to my parents, Mr. and Mrs. Felix Ozor. May God bless you both for your emotional, financial and psychological support and guidance.

Finally, all praise to the almighty God for his faithfulness and steadfast love. Thank you, Father.

Table of Contents

ABSTRACT

Infant mortality has consistently been a major problem in Nigeria and combating this tragedy is a battle yet to be won. This study examined the determining factors (socioeconomic and demographic) of infant mortality in urban centres in Nigeria. Both quantitative and qualitative research approaches were utilized complementarily. These are used to generate data to answer the research questions as well as test the hypothesis. Both primary and secondary data sources were utilized in the data collection. The primary data were gathered through in-depth interview (IDI) from women who have either previously experienced the loss of an infant or who have given birth or were pregnant in the last one year. This was supported with Key Informant Interview (KII) with health workers (nurses) in urban Nigeria. The secondary data collected from the 2013 NDHS data children's recode. The data analysis showed the socio-economic and demographic factors such as age, Marital status, occupation, birth interval, wealth index and educational level of mothers with $p<0.05$ were significant predictors of infant mortality in urban Nigeria. The logistic regression analysis showed how the different categories of the independent variables relate to infant mortality in urban Nigeria. In conclusion, the study recommended educating mothers and encouraging healthy pregnancy, spacing of birth and also fighting diarrhoea and other illness associated with infants.

Keywords: Independent variables, dependent variable, Nigeria, Infant mortality, Urban centers.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

High rate of death among children under-5 years remains one of the most prominent global health concerns. More than 10 million children below five years of age die every year around the world. The number of deaths of infant (children under one year of age) per 1000 live births within a year in a country refers to infant mortality rate. This includes neonatal death rate (occurring within the first twenty eight days of life) and post neonatal mortality rate (from the twenty eight day to the remainder of the first year). Park (2007) informs that infant mortality rates is a reasonable approximation to assume that the lower it is, the wealthier a country is, therefore it is a basis for comparison between countries regarding health status.

In developing countries, child health and survival lag behind desired targets, due to infant and child mortality. UNICEF (2008) states that about 29,000 children under the age of five die annually. The W.H.O. (2011) estimated that four million children die each year during the first 28 days of life, a large proportion of which occur during the first 24 hours. This is attributed to lack of adequate facilities and availability of health workers who are willing to discharge their duties and at the right time. The situation is particularly worrisome in sub-Saharan Africa where infant and child mortality rates are ten times higher than the industrialized regions (Barbieri, 2004).

In most developing nations, the reduction of infant and child mortality has become a central issue in their development agenda (Ugweje, 2008). Eboh (2000) also noted that infant and child health constitute the critical factors for ensuring a healthy nation and a prosperous

1

tomorrow for the child and the whole of the society as every child has a right to sound health, to grow up and to develop happily into a productive and stimulating life. Furthermore, the international convention on the Rights of the Child which was adopted by the United Nations General Assembly in 1989 obligates countries 'to ensure, to the maximum extent possible, the survival and development of the child. State parties were committed to the rights related to the survival, development and protection of the child. In operational terms, it was suggested that appropriate steps to diminish infant and child mortality and to combat disease and malnutrition be taken' (Eboh, 2000).

Infant mortality rate was used to monitor progress towards the Fourth Goal of the Millennium Development Goals of the United Nations for the year 2015. It is also employed to achieve the Sustainable Development Goals for Goal Number three (Ensure healthy lives and promote well-being for all at all ages). Most of these deaths are from preventable causes such as malaria (24%), pneumonia (20%), diarrhea (16%), measles (6%) and HIV/AIDS which accounts for more than 71% of the estimated one million under 5 death in Nigeria in 2004 (FMOTT, 2007).

Nigeria is a highly populated country comprising over 150 million people of varying ethnicity, religion, culture and tradition. Pattern and distribution of health trends vary within the country. This is even more obvious when contrasted with other countries of the world. Statistical data by the UN (2007) shows that while the average annual birth rate is about 5 million, over 475,000 of these children die before their first birthday. This makes infant mortality rate in Nigeria one of the highest both within the African continent and globally. Park (2007) noted that more than 40% of infant deaths occur within the first month of life and a large chunk of global infant mortality comes from the developing world. A United Nations report in 2005 informed

2

that Africa accounted for 40% of the total global infant mortality with over 3 million children out of 7.5 million infants' deaths. In the same year, Asia lost over 4 million infants. Africa and Asia therefore constituted over 94% global infant mortalities. This trend has been consistent for many years and deductively, Nigerian's infant mortality rate constitutes over 15% in Africa and 6% of global infant deaths.

Nigeria has experienced incidents of infant mortality. The infant mortality rate was measured at 87 in 1990. This grew to 100 per 1000 in 2003. This was caused by the persistently low numbers of births recorded in health facilities and the low number of births attended by trained health care service providers. In 2003, two third of the births in Nigeria still occurred at home. In addition only slightly more than one-third of births in are attended by doctors, nurses, or midwives. In 2000 the maternal mortality ratio in Nigeria was 800 per 100 000 live births (WHO, 2013). The 2013 Nigerian Demographic and Health Survey (NDHS) put infant mortality rate in Nigeria at 69 per 1000 live births. The analysis of mortality rates by residence showed that rural areas recorded higher mortality rates than urban centers. In 2013, infant mortality rate was 60 deaths per 1,000 live births in the urban centre compared to 86 deaths per 1,000 live births in the rural area. Also, childhood mortality was 167 deaths per 1,000 live births in the rural areas as against 100 deaths per 1,000 live births in the urban area (NDHS, 2013).

It is apparent through the elevated mortality rates that the lack of access to or use of quality delivery services is an issue of immense importance in Nigeria. Problems such as obtaining money for treatment, distance to health facility and having to take transport are some of the many difficulties stated by women in describing difficulty with accessing health care. The aforementioned lack of trained health care attended births in Nigeria is compounded by the fact that only six in ten mothers receive antenatal care from a trained medical professional. Nurses

3

and midwives are the most frequently used source of healthcare (WHO, 2013). Good antenatal care can prevent the major causes of neonatal mortality in Nigeria such as neonatal tetanus, malaria, and maternal anemia. However, as of 2003 only 58 percent of pregnant women received iron supplements and only 39 received drugs to prevent malaria. With a 13% immunization rate for children between 12-23 months, Nigeria has the lowest vaccination rate in Africa. Substantial presence of Acute Respiratory Infections and diarrhea also contribute to the elevated mortality rates for children (WHO 2013).

1.2 Statement of the Problem

Underneath the statistics lies the pain of human tragedy, for thousands of families who have lost their children. Even more devastating is the knowledge that, according to recent research, essential interventions reaching women and babies on time would have averted most of these deaths. Although analyses of recent trends show that the country is making progress in cutting down infant mortality rates, the pace was too slow to achieve the Millennium Development Goals of reducing child mortality by a third in 2015.

Preventable or treatable infectious diseases such as malaria, pneumonia, diarrhoea, measles and HIV/AIDS account for more than 70 per cent of the estimated one million infant's deaths in Nigeria (UNICEF Nigeria 2015). Malnutrition is the underlying cause of morbidity and mortality of a large proportion of children in Nigeria, It accounts for more than 50 per cent of deaths of children. 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 during pregnancy and delivery reflecting the intimate link between newborn survival and the quality of maternal care. Main causes of neonatal deaths are birth asphyxia, severe infection including tetanus, premature birth and sudden infant death syndrome.

It is important to note that wide regional disparities exist in child health indicators with the North-East and North-West geopolitical zones of the country having the worst child survival figures (UNICEF Nigeria, 2015). Commonly defined as one's ability to obtain and appropriately use good quality health technologies and commodities as and when needed for good health (Ensor & Cooper, 2004), effective access to health care services by women and children remains limited and problematic in Nigeria.

According to Frost and Reich (2008), the prevailing infant mortality rate in developing countries is because many people do not have access to health care services especially the rural dwellers. The low child health status and poor uptake of interventions designed to promote child health in Nigeria are largely attributable to poor antenatal care (ANC) practices, lack of access to and weak health systems. Onyeneho (2005) argued that failure to access child health programmes in developing countries depends upon bridging gaps in delivery and community utilization of services. The situation is further aggravated by poverty and ignorance, which account for women's inability to access critical antenatal care services and counseling on important safety measures, drugs and other interventions (Onokerhoraye, 2000).

Furthermore, World Bank (2002) observed that economic hardship is one of the major causes of the increased infant mortality rates in Africa. Resources to buy adequate and high quality foods have declined in most families and this has affected the feeding practice of the children (Rokx and Brown, 2002).

1.3 Research Questions

The following constitute the research questions for the study:

i) What is the level of infant mortality in urban centres in Nigeria?

5

ii) What are the factors (socio-economic and demographic) associated with infant mortality in urban centres in Nigeria?

iii) What is the perception of mothers in urban centres in Nigeria about the causes (socio-economic and demographic) of infant mortality?

1.4 Research Objective

The general objective of this research is to examine the determinants of infant mortality in urban centres in Nigeria. Its specific objectives are:

i) to measure the prevalence of infant mortality in urban centres in Nigeria,

ii) to determine the factors (socio-economic and demographic) associated with infant mortality in urban centres in Nigeria; and,

iii) to investigate mothers perception towards the factors responsible for infant mortality in urban areas in Nigeria.

1.5 Justification of the Study

Few Nigerians realize that children born in Nigeria are at a greater risk of dying within the first year of their lives, than in most other African countries. Statistics from the United Nations population division, pertaining to infant mortality of children in Nigeria, portrays a gloomy picture of the situation. The population situation in Nigeria shows that the prevalence of mortality, especially infant and child mortality is still very high. To this effect, this study will provide more knowledge to the body of existing literature on infant mortality in Nigeria and other developing countries with particular reference to urban areas. The findings of the study will serve as a good base or guide for future reference and will also encourage further research on the

health of the children in the urban areas. Furthermore, this study will provide relevant information on the factors that affect infant mortality especially in developing countries.

The study will identify the factors that hinder proper utilization of primary health care services and its effects on infant mortality. It will also help planners design relevant, persuasive health messages that will help change the people's attitude and behaviour towards paying more attention to infants' wellbeing and create more awareness on the situation of infant mortality in the country.

1.6 Definition of Terms

1.6.1Infant Mortality

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.

1.6.2 Mortality Rate

Mortality rate, or death rate, is a measure of the number of deaths (in general, or due to a specific cause) in a particular population, scaled to the size of that population, per unit of time. Mortality rate is typically expressed in units of deaths per 1,000 individuals per year;

1.6.3 Neonatal Mortality

Neonatal mortality refers to newborn death occurring within 28 days postpartum. Early neonatal mortality refers to a death of a live-born baby within the first seven days of life, while late neonatal mortality covers the time after 7 days until before 28 days. The sum of these two represents the neonatal mortality. In this study, it is discussed as death among children within the first 28 days of life.

1.6.4 Post-Neonatal Mortality

Post-neonatal mortality is the death of children aged 29 days to one year. The major contributors to post neonatal death are malnutrition, infectious disease, and problems with the home environment.

1.6.5 Socio-Economic Factors

Smith (2000) defined socioeconomic factors to include income, ethnicity, sense of community and other such factors. In this study socioeconomic factors will refer to education, occupational, income and legal factors that influence infant mortality in urban Nigeria.

1.6.6 Sudden Infant Death Syndrome (SIDS)

Sudden Infant Death Syndrome (SIDS) is the unexplained death, usually during sleep, of a seemingly healthy baby less than a year old. SIDS is sometimes known as crib death because the infants often die in their cribs. Although the cause is unknown, it appears that SIDS may be associated with abnormalities in the portion of an infant's brain that controls breathing and arousal from sleep.

1.6.7 Urban Area

An urban area is a human settlement with high population density and infrastructure of built environment. Urban areas are created through urbanization and are categorized by urban morphology as cities, towns, conurbations or suburbs.

1.6.8 Demographic Factors

Demographic factors are personal characteristics are used to collect and evaluate data on people in a given population. Typical factors include age, gender, marital status, race, education, income and occupation.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Globally, the number of deaths recorded among children under age five has fallen from 12.4 million in 1990 to 8.1 million in 2009 (UNICEF, 2010). This implies that in 2009 more than 22,000 children under five died each day, 12,000 fewer than in 1990. However, sub-Saharan Africa, Southern Asia and Oceania recorded no reductions (WHO, 2008). According to data on sub-Saharan Nations (2001) estimates, the overall infant and under-five mortality rates in the West African sub-region for the period 1995-2000 were 96 and 163 per 1,000 respectively. These childhood mortality rates are relatively high compared with those of the other major world regions such as Asia, Latin America and Europe. Ten percent of children born in West Africa die before their first birthday as compared with 6 percent in Asia, 4 percent in Latin America and 1 percent in Europe. HIV/AIDS has also contributed so much to high mortality among children especially in sub-Saharan Africa (Wamsele and Kisenge, 2006). According to Rutenberg and Back (2005), more than 2 million children worldwide are infected with HIV and nearly 500,000 deaths from AIDS occurred among children thereby increasing the rate of infant and childhood mortality.

2.2 Level of Infant Mortality in Nigeria

Several studies conducted in Nigeria show that infant and child mortality rate are still high. UNICEF (2010) observed that the highest rate of child mortality is identifiable in sub-Saharan Africa, including Nigeria, where a child in eight dies before age of five. This is nearly 20 times the average of 1 in 167 in developed regions. About 50% of the world's under-five deaths in

9

2009 occurred in five countries namely India, Nigeria, Democratic Republic of Congo, Pakistan and China. The 2008 Nigerian Demographic and Health Survey (NDHS), NPC and ICF Macro (2009) report showed that 'the infant mortality rate is 75 deaths per 1,000 live births, while the under-five mortality rate is 157 per 1,000 live births for the five-year period immediately preceding the survey. The neonatal mortality rate is 40 per 1,000 births. Therefore, almost half of childhood deaths in Nigeria occurred during infancy, with one-quarter taking place during the first month of life'. This resonates with the findings from Nnorom (2003) which asserted that infant and child mortality consistently pose serious health challenges in Nigeria.

Progress in child mortality reduction remains unacceptably low in Nigeria. Available statistics suggest that child mortality levels continue to be high and exhibit wide geographic disparities (NPC, 1998; NPC, 2004). Adeoti's (2009) study of the demand for reproductive health among mothers in selected Nigerian communities identified that the major cause of constant rise in child mortality in Nigeria was illiteracy on the part of the mother because this determined how well the child would be. However, existing literature suggests that there are other factors which account for the constantly rising rate of child mortality in Nigeria. One of such factors is access to services critical to child survival and well-being (Adeoti, 2009).

According to infant mortality statistics from the linked birth/infant death data set, infant mortality rates were much higher for low birth weight (less than 2,500 grams) than for infants with birth weights of 2,500 grams or more. The infant mortality rate for very low birth weight (less than 1,500 grams) infants was more than 100 times the rate for infants with birth weights of 2,500 grams or more (Matthews 2010).

2.3 Factors Associated with Infant Mortality in Nigeria

In Nigeria urban areas, a number of factors may be identified as the determinants of infant mortality. These factors are examined below:

2.3.1 Poor Maternal Health

The survival and health of newborn babies, an important part of the Millennium Development Goal (MDG) to tackle infant mortality, goes in tandem with maternal health. The care that can reduce maternal deaths and improve women's health is also central to the survival and health of new born (Zoe, 2007). WHO (2005) suggests that since most women will give birth, health systems should be designed to cope with this and provide protection against possible death or disability. The Global Health Council (2000) informs that a lot of children and their mothers go through life threatening complications during pregnancy and child birth.

Cigarette smoking is another factor in high infant mortality rate. Female smokers have an increased risk of preterm delivery, still-birth, low birth weight infants, and sudden infant death syndrome. Also, pregnant women who smoke double their chances of delivering a still born infant, and they also double their risk of having an infant die during the first year of life (U.S Department of Health and Human Services, 2004).

2.3.2 Nutritional Status

According to Nyaruhucha, Mamiro, Kerenji and Shayo (2006), the health status of individuals or population groups is influenced by their intake and utilization of nutrients. Ngwu (2009) reiterates that malnutrition has contributed to more than half of recorded deaths of new born children. Onyeozili (2005) validates this and opines that unless the present situation is checked in Nigeria, one in ten children below one year may not be properly developed mentally, due to malnutrition. In a comparative analysis of infant mortality in Northeast and Southeast Nigeria,

11

Ugwueje (2008) also identified malnutrition as one of the major factors leading to infant mortality and pointed out that this has a significant effect on infant mortality because it reduces resistance to infections.

2.3.3 Demographic Factors

Certain demographic factors like age have been identified to influence childhood mortality. In a study of the socio-economic factors that affect infant and child mortality in Africa, Tiapani (2003) identified a woman's age at birth as a factor in childhood mortality. Hawlader and Bhulyan (2005) also found that younger females (less than 20years) recorded high risk of infant death while older women also recorded high infant death. Ogunlade and Mezue (1987) argued that if all births to women below 20 and above 35 years were eliminated, infant and child mortality will experience decline in Nigeria.

Birth intervals have also been related to infant and child mortality. Callum & Clenlend's (2006) study in Egypt showed that children born within less than 2 years interval experience mortality more than those with more than 2 years interval.

2.3.4 Environmental Factors

Infant and child mortality have been found to be closely related to the physical environment in which a child is born. Applying their analytical framework to child mortality in Africa, Mosley and Chen (1984) found that the child's environment determines the kind of disease or injury the child will be exposed to. In other words, if the air, water, food etc, in that environment are contaminated, the child's health will be affected. Furthermore, Meegama (2006) found that there is significant difference in the health of children that live in the rural areas and those that live in the urban area in Sri-Lanka. He showed that children in the rural communities are more likely to

suffer health problems due to poor access to health services. All the same, children in urban slums in Sri Lanka experienced more environmentally related infections.

2.3.5 Access to Primary Health Care Services in Nigeria

Access to Primary Health Care services implies that facilities exist, that people have information they need to use them properly, that the facility can be reached by the people who need them, and that the cost of care is affordable. This means that access to information, financial accessibility (affordability) and physical accessibility are available and guaranteed (Alumana, 2003). In spite of these however, other issues which interfere with people's willingness and ability to access health care remain unclear. This concurs with Inyang (2004) which asserts that accessibility means the ease with which potential health care seekers get to the points where health care services are delivered.

According to Brown, Franco, Rafah and Hatzel (2003), access means that health care services are unrestricted by geographic, economic, cultural, social, organizational or linguistic barriers. Frost and Reich (2008) have identified the bottlenecks to access as major problems in the use of health care services in developing countries. In Nigeria, a number of factors may be identified as barriers to access and utilization of health care services. These are examined below.

2.3.6 Factors Affecting Access to Health Care Services in Nigeria

2.3.6.1 Political factors

The United Nations (2000) report on health care expenditure puts Nigeria's public health expenditure at 1.7 percent of its gross Domestic Product (GDP) and its under-5 mortality at 157 out of every 1000 live births due to poor health care delivery. This is unacceptable and further exposes the lack of political will to invest in the health of the populace. This is especially true

13

since maternal and child health provide two key indicators of a society's level of development and the performance of its health delivery system.

Nwokoby (2000) noted that although the national health policy hinges on PHCs as the means to improve health at the grass root, poor funding by the Government has been a major hindrance to the success of PHCs in the country. Jewett (2005) also stated that most governments in developing countries do not appropriate funds to health-related issues. Furthermore, NPC and ICF macro (2009) reporting on the 2008 NDHS for Nigeria revealed that only 19% of children are fully immunized by 12 months of age. Overall 29% of children in Nigeria have not received vaccination. The rural/urban aggregated data also revealed that the situation is worse within the rural areas. For instance, while 37.5% of children in the urban areas all had immunizations, only 16.2 %of their rural counterparts were fully immunized and this is due to unequal access and distribution of health care services.

2.3.6.2 Organizational Factors

Organizational access, according to Brown et al (2003), refers to the extent to which services are conveniently organized for prospective client and encompasses such issues as clinic hours and appointment system, waiting time and the mode of service delivery. Equally implicated here, are issues of attitude of health workers and buying of drugs outside the facility even when health care is touted to be free.

2.3.6.3 Location/Geographic Factors

Distribution of primary health services in the country has posed a major barrier in accessing these centres. Inyang (2004), in a study of provision of health care services in Nigeria, opined that one of the difficulties that is faced by the masses in accessing health care services in the

country is the inevitable lopsided distribution pattern of the health facilities. This means that most of the health centres are located in the urban areas.

Rural dwellers rely on the facilities in the urban centers because they do not have access to one in their area (World Bank, 2006). Onokerhoraye (2005) pointed out, in a study of health and planning services in Nigeria, that geographical location influences access and utilization of health centers. Similarly, Ensor and Cooper (2004) identified distance as a critical factor in the uptake of health care services and that access and use of health care services tend to decline with distance.

2.3.6.4 Cost of Services

Much of the literature on access to health care services has focused on high prices as a key barrier to widespread access and has shown that affordability is a prerequisite for ensuring access (Frost & Reich, 2008). Ensor and Cooper (2004) identified that user charges are an important barrier in accessing healthy services especially in developing countries. However, Onokerhonye (2005) opines that PHC is not accessible to the masses because of high cost of securing services. The high cost of services pushes the masses to patronize traditional healers as ease of payment and absence of bottlenecks is a major advantage. World Bank (1996) argues that socioeconomic status is a determinant of the health of the woman which in turn affects the health of the child.

2.3.6.5 Cultural Barriers

Many cultural, religious, or social factors may impede the demand for healthcare. In communities where women are not expected to do anything without the consent of men cultural affiliation may be a barrier. Rashid, Hadi, Afsana and Bequm (2001), found from study in Bangladesh that the restrictions the women face prevented them from accessing healthcare for themselves or their children. Researches from several African countries like Burkina Faso,

15

Malawi, Ghana, Nigeria and Uganda identified culture as primary determinant of access to health services (APHR, 2007). Asakitikpi (2007) also pointed out the neglect of the spiritual dimension of health especially as it pertains to African societies and observed that most health issues and death in the African society are attributed to spiritual causes.

2.3.6.6 Education

Education is a long established determinant of a child's health. In a study of effects of schooling on health, Grossman and Kaestmer (2000) found education to be the most important correlate of good health. The education of parents, particularly the mother, is also important in determining child health status. Maternal schooling, for example, was found to be the most important determinant of child survival in a study in Pakistan (Agha, 2000). According to Umoh (2004), lack of education or ignorance is a major constraint in accessing healthcare services in Nigeria.

From the analysis of a survey data on the statistical association between maternal education on health and child survival from 17 developing countries, Bicego and Boerma (2005) revealed that there is a strong link between maternal education and utilization of the available health care system. The study concluded that ignorance among uneducated mothers affects the wellbeing of their children. Caldwell (1979) reported on the effect of mother's education on the reducing the child mortality and theorized that mother's education works through changing feeding and care practices, leading to better health seeking behavior and by changing the traditional familial relationships. In supporting Caldwell's explanation, Hobcraft (1993) explained that education can contribute to child survival by making women more likely to marry and enter motherhood later and have fewer children, utilize prenatal care and immunize their children. The results also, however, concluded that the effect of maternal education on child

survival is weaker in sub-Saharan Africa. Similar findings have been reported elsewhere (Devlieger, 2005).

2.3.6.7 Poverty

A child born to a financially deprived and less educated family is at risk of perinatal death or within the first month of life. This is because since the mother may be poorly nourished during pregnancy; had little or no antenatal care and is likely to deliver in ill-equipped health facility. Besides, the level of competition over resources when the family is large could lead to poor care of family members including the very young ones. All these factors are further aggravated by limited access to health services due to poor income and low levels of maternal education, often leading to the non-immunization of the child (Policy Project/Nigeria, 2002). In addition, poverty is also a health risk in infant mortality. Indeed, the health risk associated with poverty begins before birth. Even with the expansion of prenatal care by Medicaid poor mothers, especially teen-mothers are more likely to deliver low birth weight babies, who are more likely than normal birth weight infants to die. Also pregnant women living below the poverty line are more likely than other pregnant women to be physically abused and to deliver babies who suffer the consequences of prenatal child abuse (Zelenko, 2005).

2.5 Conceptual Framework

Mosley and Chen (1984) set the framework of child survival based on the assumption of all socioeconomic factors of child mortality necessarily operate through a common set of intermediate factors. Mosley and Chen define five categories of a total of 14 proximate determinants including: maternal factors (age, parity, birth interval), environmental contamination (air, food/water, skin/soil/inanimate objects, insect vectors), nutrient deficiency

17

(calories, protein, micronutrients), injury (accidental, intentional) and personal illness control (personal preventive measures, medical treatment). Determinants in the first four groups affect the rate at which children move from healthy to sick, whereas factors in the last group influence both this rate (through prevention) and the rate of recovery (through treatment). This list of proximate determinants is intended to be exhaustive, such that child health will change if and only if one or more of the determinants change.

The operation of the five groups of proximate determinant is illustrated with the diagram below:
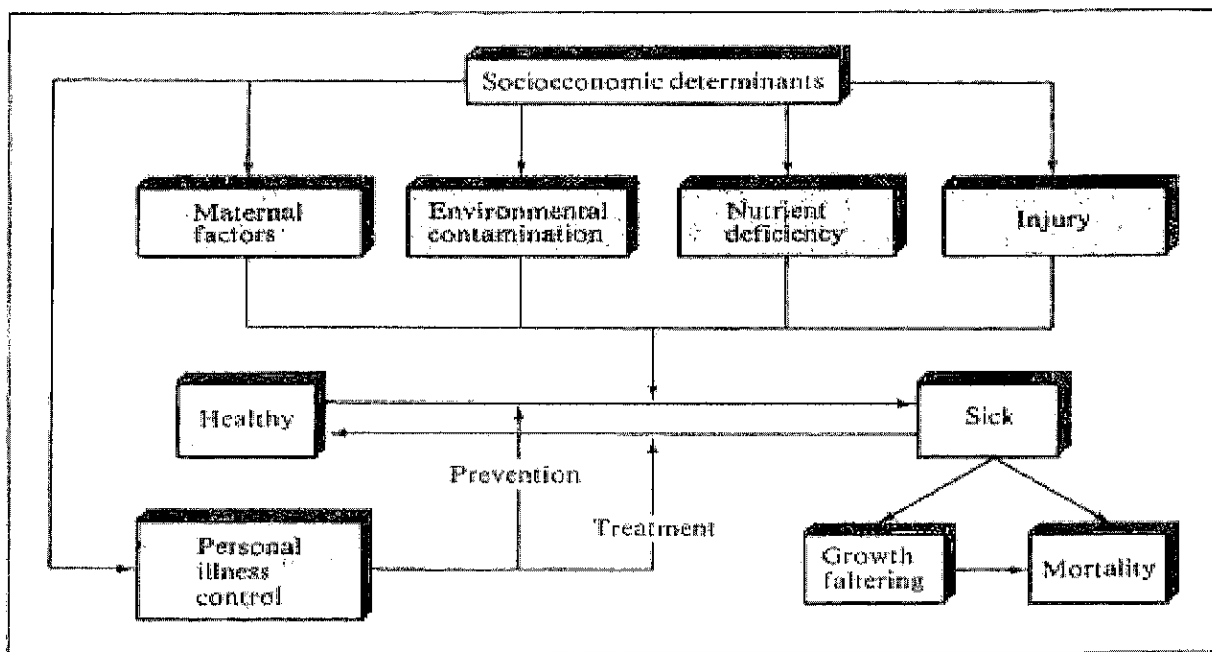
Source: Mosley and Chen (1984)

The framework thus provides a conceptual model for researchers, whether social scientists or epidemiologists, on child survival.

18

2.6 Hypothesis

i) **Null hypothesis (Ho)**: There is no significant relationship between socio-economic factors and infant mortality

Alternate hypothesis (H1): There is a significant relationship between socio-economic factor and infant mortality.

ii) **Null hypothesis (Ho):** There is no significant relationship between socio-demographic factors and infant mortality

Alternate hypothesis (H1): There is a significant relationship between socio-demographic factors and infant mortality.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Research Design

Both quantitative and qualitative research approaches are utilized complementarily in this study. This harnessed the strength of both approaches in order to generate a robust and holistic analysis of the data studied.

3.2 Background of the Study Area

Nigeria is situated in the West African region and lies between longitudes 3 degrees and 14 degrees and latitudes 4 degrees and 14 degrees. It has a land mass of 923,768 sq.km. It is bordered to the north by the Republics of Niger and Chad, it shares borders to the west with the Republic of Benin, while the Republic of Cameroon shares the eastern borders right down to the shores of the Atlantic Ocean which forms the southern limits of Nigerian Territory. The 800km of coastline confers on the country the potentials of a maritime power. Land is in abundance in Nigeria for agricultural, industrial and commercial activities.

Nigeria is often referred to as the "Giant of Africa", owing to its large population and economy. With approximately 182 million inhabitants, Nigeria is the most populous country in Africa and the seventh most populous country in the world. Nigeria has one of the largest populations of youth in the world. The country is viewed as a multinational state, as it is inhabited by over 500 ethnic groups, of which the three largest are the Hausa, Igbo and Yoruba. These ethnic groups speak over 500 different languages, and are identified with wide variety of cultures. The official language is English. Nigeria is divided roughly in half between Christians, who live mostly in the southern part of the country, and Muslims in the northern part. A minority

of the population practice religions indigenous to Nigeria, such as those native to Igbo and Yoruba peoples.

Nigeria is divided into thirty-six states and one Federal Capital Territory, which are further sub-divided into 774 Local Government Areas (LGAs). This reflects the country's tumultuous history and the difficulties of managing such a heterogeneous national entity at all levels of government. In some contexts, the states are aggregated into six geopolitical zones:

North West: Jigawa, Kaduna, Kano, Katsina, Kebbi, Sokoto and Zamfara States

North East: Adamawa, Bauchi, Borno, Gombe, Taraba and Yobe States

North Central: Benue, Kogi, Kwara, Nasarawa, Niger, Plateau and Federal Capital Territory

South East: Abia, Anambra, Ebonyi, Enugu and Imo States

South-South: Akwa Ibom, Cross River, Bayelsa, Rivers and Delta State

South West: Ekiti, Lagos, Ogun, Ondo, Osun and Oyo States

Nigeria has eight cities with a population of over 1 million people (from largest to smallest: Lagos, Kano, Ibadan, Kaduna, Port Harcourt, Benin City, Maiduguri and Zaria. Lagos is the largest city in Africa, with a population of over 17 million in its urban area alone. However, these figures are regularly disputed in Nigeria.

3.3 The Study Population

The study population comprises women aged 15-49 years in urban centres in Nigeria because this age bracket represents the reproductive years of women as defined by WHO (2006). Eligible participants include all women that have given birth in the last one year and/or were pregnant

and reside in any urban centers in Nigeria. Every eligible woman in urban centres in Nigeria has equal chance of being selected for this study. The respondents can be married, single, divorced, separated or widowed.

3.4 Data Collection Methods

Both primary and secondary data were utilized. The primary data was gathered via in-depth interviews with six women who had previously experienced the loss of an infant, given birth or were pregnant in the last one year. Also, a Key Informant Interview was conducted with two nurses in Lagos urban areas. The secondary source of data was the 2013 NDHS data children's recode and online reports from relevant articles.

3.5 Variable of Interest and Their Categories:

NO.	DEPENDENT VARIABLE
1.	Infant mortality

NO.	INDEPENDENT VARIABLE	CATEGORIES
1.	Age of mother	(15-19), (20-24), (25-29), (30-34), (35-39), (40-44), (45-49)
2.	Marital status of mother	Single,married,separated, divorced, widowed
3.	Mother's Religion	Christianity,Islamic,Traditional, others
4.	Mother's Ethnicity	Igbo, Yoruba, Hausa, Others

5.	Mother's occupation	None, trader, civil servant, others
6.	Mother's educational level	None, primary, secondary, higher
7.	Wealth index of mother	Very-poor, poor, middle ,rich, very-rich
8.	Region of residence	North East, North West, South East, South West, South-South, North Central.
9.	Birth interval	Less than one year, 2-4 years, 5 years and above

3.6 Statistical Technique Use for Data Analysis

The data was analyzed using the STATA version 12.0. First, characteristics of the study sample are described using univariate analysis (frequency distribution and simple percentages. Bivariate analysis such as chi-square was utilized. In addition, the multivariate analysis logistic regression analysis was done in order to estimate the relative influence of the independent variables on infant mortality.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Univariate Analysis

TABLE 1: Distribution of Respondents by Socio-demographic Characteristics by weighted percentage

VARIABLES	FREQUENCIES	PERCENT
REGION		
North Central	2,210	4.22
North East	1,606	10.33
North West	2,384	15.34
South East	2,960	19.04
South South	2,062	13.26
South West	4,323	27.81
TOTAL	**15,545**	**100.00**
AGE		
15-19	3,164	20.35
20-24	2,667	17.16
25-29	2,796	17.99
30-34	2,241	14.42
35-39	1,869	12.02
40-44	1,413	9.09
45-49	1,395	8.97
TOTAL	**15,545**	**100.00**
ETHNICITY		
Fulani/Hausa	2,823	18.26
Igbo	3,699	23.93

24

Yoruba	4,266	27.59
Others	4,672	30.22
TOTAL	**15,460**	**100.00**

MARITAL STATUS

Never in union	5,286	34.00
Married	9,097	58.52
Cohabiting	339	2.18
Widowed	458	2.95
Divorced	187	1.20
Separated	178	1.15
TOTAL	**15,545**	**100.00**

RELIGION

Christian	9,558	61.74
Islam	5,824	37.62
Traditionalist	98	0.63
Others	2	0.01
TOTAL	**15,482**	**100.00**

HIGHEST EDUCATIONAL LEVEL

No education	2,306	14.89
Primary	2,561	16.54
Secondary	7,822	50.52
Higher	2,793	18.04
TOTAL	**15,482**	**100.00**

WEALTH INDEX

Poor	1,346	8.69
Middle	2,441	15.77
Rich	11,695	75.54
TOTAL	**15,482**	**100.00**

RESPONDENT'S OCCUPATION (GROUPED)

Not working	5,529	35.84

25

Working	9,900	64.16
TOTAL	**15,429**	**100.00**
CHILD IS ALIVE		
No	596	6.13
Yes	9,129	93.87
TOTAL	**9,725**	**100.00**
BIRTH INTERVAL		
Less than a year	104	1.30
2-4 years	5,888	73.72
5 years above	1,995	24.98
TOTAL	**7,987**	**100.00**

Source: NDHS 2013

Research Question One: What is the level of infant mortality in urban centres in Nigeria?

The percentage distribution of infant mortality revealed that larger proportion of the respondent are from South Western region 27.81% followed by South-East with 19.04% while others are as follows, North-Central 4.22%, North-East 10.33% North-West 15.34% and South-South 13.26%.

The percentage distribution of infant mortality as shown in Table 1 disclosed that approximately 6.13% of the respondent's children are not alive. The socio-demographic characteristics of sample population showed that the highest proportion of respondents was aged between 15-19, 20.35%, while 17.16% of them belonged to the age group 20-24, and 17.99% belonged to the age group 25-29. 14.42% belonged to the age group 30-34, while 12.02% belonged to ages 35-39 years, 9.09% belonged to the age group 40-44 while 8.97% were between the ages of 45 and 99. This suggests that majority of the respondent are young mothers aged 15-19 years. The percentage distribution of the respondent according to the ethnic group

26

revealed that 18.26% of them are Hausa/Fulani, while those who belong to the Igbo, Yoruba any other ethnic groups are 23.93%, 27.59% and 30.22% respectively. The percentage distribution of the respondent marital status shows that the largest proportion of the respondent are married with 58.52% followed by those who are single with 34.00% while those who are Cohabiting, Widowed, Divorced and Separated are as follows 2.18%, 2.95% 1.20% and 1.15% respectively.

The religion affiliation of the respondents shows that 61.74% of the women practice Christianity, 37.62% practice Islam religion and 0.63% practice traditional while 0.01% practice Other Religion. Most of the sample population had secondary education 50.52%, followed by higher education with 18.04% while only 16.54% possesses primary education and 14.89% of them with no education.

The percentage distribution of wealth status indicates that more than half of the respondents are rich with 75.54% being categorized as rich and approximately 15.77% of respondents were classified as middle class and the remaining 8.69% of respondents are classified as poor. The distribution also showed that the majority of the respondents are working 64.16% while only 35.84%are not working.

The percentage distribution of birth interval indicates that larger proportion of the respondent space their birth for 2 to 4 years with 73.72% followed by those who space their birth for 5 years and above with 24.98%, while the least respondent space their birth for less than a year with 1.30%

4.2 Bivariate Analysis

TABLE 2: Table of Relationship Showing the Variables of infant mortality

Variables	Child Is Alive N= 9,725 (%)		Total
	NO	YES	
Age			
15-19	21(9.68)	196(90.32)	217(100.00)
20-24	50(4.28)	1,118(95.72)	1,168(100.00)
25-29	70(3.50)	1,929(96.04)	1,999(100.00)
30-34	76(3.96)	1,841(96.04)	1,917(100.00)
35-39	108(6.20)	1635(93.80)	1743(100.00)
40-44	125(9.34)	1214(90.66)	1339(100.00)
45-49	146(10.88)	1196(89.12)	1342(100.00)
Total	596(6.13)	9129(93.87)	9725(100.00)
Pearson chi2(6) = 127.8596 Pr = 0.000			
Marital status			
Single	23(7.67)	277(92.33)	300(100.00)
Married	475(5.65)	7935(94.35)	8,406(100.00)
Cohabiting	15(5.70)	248(94.30)	263(100.00)
Widowed	49(11.16)	390(88.84)	439(100.00)
Divorced	19(12.03)	139(87.97)	158(100.00)
Separated	15(9.43)	144(90.57)	159(100.00)
Total	596(6.13)	9129(93.87)	9725(100.00)
Pearson chi2(5) = 36.5531 Pr = 0.000			
Ethnicity			
Fulani/Hausa	140(6.95)	1873(93.05)	2013(100.00)
Igbo	166(7.87)	1943(92.13)	2109(100.00)

Yoruba	138(4.98)	2635(95.02)	2773(100.00)
Others	152(5.37)	2678(94.63)	2830(100.00)
Total	596(6.13))	9129(93.87)	9725(100.00)
Pearson chi2(3) = 22.7390 Pr = 0.000			
Religion			
Christian	343(6.17)	5218(93.05)	5561(100.00)
Islam	242(5.94)	3829(94.06)	4071(100.00)
Traditionalist	11(11.96)	81(88.04)	92(100.00)
Others	0(0.00)	1(100.00)	1(100.00)
Pearson chi2(3) = 5.7517 Pr = 0.124			
Occupation			
Not working	96(5.06)	1803(94.94)	1899(100.00)
Working	498(6.39)	7297(93.61)	7795(100.00)
Pearson chi2(1) = 4.7201 Pr = 0.030			
Wealth status			
Poor	107(10.91)	874(89.09)	981(100.00)
Middle	120(7.53)	1474(92.47)	1594(100.00)
Rich	369(5.16)	6781(94.84)	7150(100.00)
Pearson chi2(2) = 56.0070 Pr = 0.000			
Educational attainment			
No education	178(8.63)	1885(91.37)	2063(100.00)
Primary	155(7.21)	1996(92.76)	2151(100.00)
Secondary	190(4.77)	3791(95.23)	3981(100.00)
Higher	73(4.77)	1457(95.23)	1530(100.00)
Pearson chi2(2) = 44.3678 Pr = 0.000			
Birth interval			
Less than a year	17(16.35)	87(83.65)	104(100.00)
2-4years	368(6.25)	5520(93.75)	5888(100.00)
5 years above	104(5.21)	189194.79	1995(100.00)

| Pearson chi2(2) = 21.9504   Pr = 0.000 |

Source: NDHS 2013

Research Question Two: What are the factors (socio-economic and demographic) associated with infant mortality in urban centres in Nigeria?

The calculated p-value from the Statistical Software with chi-square value for each of the women indicators that are significant to infant mortality revealed that wealth index(X^2=4.7201, p<0.05), occupation (X^2=56.0070, p<0.05) and Education (X^2=44.3678, p<0.05) are respectively related to infant mortality among women in urban Nigeria. There is enough statistical reason to reject H_0 at 5% level of significance for some of the socio-economic background of women. Therefore the results indicate that socio-economic variable such wealth index and occupation are significant predictor to infant mortality in urban Nigeria.

Since the calculated p-value from the Statistical Software with chi-square value for each of the independents variables; age (X^2=127.8596, p<0.05), marital status (X^2=36.5531, p<0.05), ethnicity (X^2=22.7390, p<0.05), religion (X^2=5.7517, p>0.05) and Birth interval (X^2= 21.9504, p<0.05) are respectively related to infant mortality among women in urban Nigeria, we do have enough statistical reason to reject H_0 at 5% level of significance for some of the socio-demographic background of women. Therefore the results indicate that socio-demographic variable such age, marital status; ethnicity, birth interval, and education are significant predictor to infant mortality in Urban Nigeria.

4.3 Multivariate Analysis

The binary logistic regression analysis is performed to determine the relative importance of the different categories of the independent variables in relation to infant mortality which is the dependent variable.

TABLE 4.3 LOGISTIC REGRESSIONS PREDICTING INFANT MORTALITY

	Odds Ratio	P- Value	95% Conf. Interval	
Age				
15-19	1.0(RC)	-	-	
20-24	1.492356	0.135	0.882632	2.523277
25-29	.9093294	0.722	0.590669	1.6805
30-34	.9963029	0.989	0.539018	1.53405
35-39	2.255227	0.003**	1.312414	3.875339
40-44	2.313139	0.002**	1.577397	4.555722
45-49	2.680705	0.000**	1.356143	3.945463
Marital Status				
Single	1.0(RC)	-	-	
Married	0.774728	0.457	0.395562	1.517344
Cohabiting	1.292184	0.467	0.6480657	2.576497
Widowed	1.311635	0.343	0.7487339	2.297728
Divorced	1.769762	0.017*	1.105445	2.833298
Separated	1.011172	0.976	0.4974148	2.055565
Religion				
Christianity	1.0(RC)	-	-	
Islam	.8495259	0.629	.4382056	1.646931
Traditional	1.107791	0.330	.9017516	1.360907

Others	1	-	-	
Level of education				
No education	1.0(RC)	-	-	
Primary	1.467541	0.006**	.9114247	1.51217
Secondary	1.173981	0.214	1.116295	1.929306
Higher	0.998783	0.157	0.871642	2.059915
Occupation				
Not working	1.0(RC)	-	-	
Working	0.883814	0.318	.6933624	1.126578
Wealth status				
Poor	1.0(RC)	-	-	
Middle	1.401306	0.018*	1.058429	1.855256
Rich	0.878512	0.172	0.822479	2.244366
Birth interval				
Less than a year	1.0(RC)	-	-	
2-4 years	1.131035	0.341	1.72464	4.981309
5 years and above	0.863059	0.391	1.037687	1.974956

Source: NDHS 2013

Significant Level (P < 0.01%) **, Significant Level (P < 0.05%)* Reference Category (RC)

Logistic Regression (LR)

The likelihood ratio of the logistic regression in Table 4.3 revealed that age contributes to the likely infant mortality in Urban Nigeria. In addition, taking 15-19 as a reference point (1.00), the age group of 20-24, 35-39 40-44 and 45-49 with (OR=1.492356,p>0.05), (OR=2.255227,p<0.01), (OR=2.313139,p<0.01), (OR=2.680705,p=0.00), respectively are more

likely to have lost an infant in urban Nigeria while women in the age group 25-29 and 30-34 are less likely to have lost an infant in urban Nigeria with respective odds ratio and p-value(OR=0.9093294,p>0.05 and OR=0.9963029,p>0.05).

The likelihood ratio of the logistic regression in Table 4.3 indicated that marital status contributes to infant mortality in urban Nigeria. In addition, taking single as a reference point (1.00), the divorced, cohabiting, widowed and separated women are more likely to have lost an infant with (OR=1.769762, p<0.05, OR=1.292184, p>0.05, OR=1.311635, p>0.05, and OR=1.011172, p>0.05) respectively. But the married people are less likely to have lost an infant in urban Nigeria with (OR=0.7747282, p>0.05)

Also the likelihood ratio of the logistic regression in the table above revealed that religion contributes to the likely infant mortality in urban Nigeria. In addition, taking Christianity as a reference point (1.00), the traditional women are more likely to have lost an infant in urban Nigeria with (OR=1.107791, p>0.001) while the Muslim women are less likely to have lost an infant in Urban Nigeria with (OR=0.8495259, p>0.001).

The likelihood ratio of the logistic regression in Table 4.3 suggested that level of education contributes to the likely infant mortality in urban Nigeria. In addition, taking no education as a reference point (1.00), respondents with primary and secondary education and higher education are more likely to have lost an infant in urban Nigeria with (OR=1.467541,p<0.01, OR= 1.17398, p>0.05,) respectively, while women who attained higher education are less likely to have lost an infant with (OR=0.878512, p>0.05).

Occupation was also identified as an influence on the likelihood of infant mortality in urban Nigeria. The result revealed that working women are less likely to have lost an infant in

33

urban Nigeria with (OR=0.8838137, p>0.05). The likelihood ratio of the logistic regression in Table 4.3 revealed that wealth index contributes to infant mortality in urban Nigeria. In addition, taking the poor quintile as a reference category (1.00), the middle quintile are more likely to have lost an infant in Urban Nigeria with (OR=1.401306, p<0.05), while women that are in the rich quintile are less likely to have lost an infant with (OR0.878512, p>0.05)

The likelihood ratio of the logistic regression in the table above revealed that birth interval contributes to infant mortality in urban Nigeria. In addition, taking the less than as a reference category (1.00), the women who space their birth for 2-4 years are more likely to have lost an infant in urban Nigeria with (OR=1.131035, p>0.05) than women who space their birth from 5 years and above with (OR=0.863059, p>0.05).

4.4 Qualitative Study Analysis

This study also utilized a qualitative research approach in order to complement the quantitative research and also to shed more light on the study. Primary data was gathered via in-depth interview from six women and key informant interview from two female nurses.

Research Question Three: What is the perception of mothers in urban centres in Nigeria about the causes of infant mortality in Nigeria?

To answer this research question, respondents were asked to give their perspectives on the factors responsible for infant mortality in Nigeria. These are there responses below:

"Poverty as a result of low income and high cost of living are the major problems that cause infant mortality in urban Nigeria." [Participant: IDI; Female; Doyin, Surulere, Lagos]

34

"Mother's age and short birth interval are the major problems that cause infant mortality." [Participant: IDI; Female Community Member; Surulere]

"I'll say spiritual attack! Yes! Many people in this country still engage in diabolical things, you will see a healthy baby today and the next day you will hear that the baby is dead just like that, how can something like this be explained? The only answer from my own point of this issue is spiritual attack." [Participant: IDI; Female Community Member; Ebute-meta, Lagos].

"Diarrhoea has claimed so many life of many infant, unfortunately for me I lost my first child to diarrhoea, though on one side I'll say it's the will of God and on the other side I'll say it's my fault" [Participant: IDI; Female, Ebute-meta, Lagos]

"The most common factors responsible for infant mortality are low educational level of mothers, young women given birth at a very tender age as well as women given birth at their old age, short birth spacing and malnutrition." [Participant: KII; Health Worker; Surulere, Lagos].

"The major factors responsible for infant mortality are unhealthy habits by pregnant women, for example many women don't go for antenatal care and most women eat junk food, unhealthy and unbalanced food when they are pregnant, some smokes and take alcoholic drinks and the consequences of this can be detrimental to their health and the survival of their infants." [Participant: KII; Health Worker; Surulere, Lagos.]

35

4.5 Test of Hypothesis

Hypothesis 1

Ho: There is no significant relationship between socio-economic factors and infant mortality.

Hi: There is significant relationship between socio-economic factors and infant mortality.

Decision Rule:

Reject Ho if the calculates p-value is less than 0.05 level of significance, otherwise do not reject.

Since the calculated p-value from the Statistical Software with chi-square value for each of the women indicators that are significant to infant mortality are wealth index ($X2=4.7201$, $p<0.05$), occupation ($X2=56.0070$, $p<0.05$) and Education ($X2=44.3678$, $p<0.05$) are respectively related to infant mortality among women in Urban Nigeria, we do have enough statistical reason to reject H0 at 5% level of significance for some of the socio-economic background of women. Therefore the results indicate that socio-economic variable such wealth index and occupation are significant predictor to infant mortality in urban Nigeria.

This evidence is corroborated by the qualitative data, through which participants gave their perspective on the factors responsible for infant mortality as shown in the sample quotes below.

"Poverty as a result of low income and high cost of living are the major problems that cause infant mortality in urban Nigeria." [Participant: IDI; Female; Doyin, Surulere, Lagos]

"The major factors responsible for infant mortality are malnutrition as a result of high level of poverty in the country today and also mother's ignorance as a result

36

of lack of awareness towards health issues." [Participant: IDI; female; Surulere, Lagos.]

Hypothesis II:

Ho: There is no significant relationship between socio- demographic factors and infant mortality.

Hi: There is significant relationship between socio-demographic factors and infant mortality.

Decision Rule:

Reject Ho if the calculates p-value is less than 0.05 level of significance, otherwise do not reject.

Since the calculated p-value from the Statistical Software with chi-square value for each of the independents variables; age ($X2=127.8596$, $p<0.05$), marital status ($X2=36.5531$, $p<0.05$), ethnicity ($X2=22.7390$, $p<0.05$), religion ($X2=5.7517$, $p>0.05$), Birth interval ($X2=21.9504$, $p<0.05$) and Education ($X2=44.3678$, $p<0.05$) are respectively related to infant mortality among women in Urban Nigeria, we do have enough statistical reason to reject H0 at 5% level of significance for some of the socio-demographic background of women. Therefore the results indicate that socio-demographic variable such age, marital status; ethnicity, birth interval, and education are significant predictor to infant mortality in Urban Nigeria.

This evidence is corroborated with the qualitative data, through which participants gave their perspective on the factors responsible for infant mortality as shown in the sample quotes below:

"Mother's age and short birth interval are the major problems that cause infant mortality." [Participant: IDI; Female Community Member; Surulere]

Confirming the assertions, a health worker (nurse) in Surulere Lagos noted that:

37

"The most common factors responsible for infant mortality are low educational level of mothers, young women given birth at a very tender age as well as women given birth at their old age, short birth spacing and malnutrition." [Participant: KII; Health Worker; Surulere, Lagos]

4.6 Discussions

The study revealed that socio-economic and demographic factors such as age, marital status, ethnicity, occupation, birth interval, wealth index and educational level of mothers are significant predictors of Infant mortality in urban centres in Nigeria with $p < 0.05$. Under the age category, this study revealed that younger mothers (women age <20 years) and older mothers (women aged 35 and above) are more likely to lose an infant than mothers in between these age groups. To corroborate this result, Hawlader and Bhulyan (2005) found that younger females (less than 20years) recorded high risk of infant death while older women also recorded high infant death. Ogunlade and Mezue (1987) argued that if all births to women below 20 and above 35 years were eliminated, infant and child mortality will experience decline in Nigeria.

Findings from mothers' educational level category revealed that mothers with poor educational background are more likely to lose an infant than mothers with higher educational attainment. Adeoti (2009) corroborates this finding as it suggested that the major cause of constant rise in child mortality in Nigeria was illiteracy on the part of the mother because this according to him determined how well the child would be. Education of parents, particularly the mother, is also important in determining child health status. Maternal schooling, for example, was found to be the most important determinant of child survival in a study in Pakistan (Agha, 2000).

38

This study also revealed that mothers with short birth intervals (less than 2 years) are more likely to lose an infant than mothers with longer birth intervals. It finds corroboration in Callum and Clelend (2006) which observed that children born within less than 2 years interval experience mortality more than those with more than 2 years interval.

This study also identified poverty as one of the major causes of infant mortality. To strengthen this assertion, Policy Project/Nigeria (2002) asserted that a child born to a financially deprived and less educated family is at risk of perinatal death or within the first month of life. The reasons for these are obvious since the mother may be poorly nourished during pregnancy, had little or no antenatal care and likely to deliver in ill-equipped health facility. In this study malnutrition is also highlighted as a major cause of infant mortality in Nigeria. This is in tandem with Ugwueje (2008) who identified malnutrition as one of the major factors in infant mortality.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of Findings

The summary of the findings will be presented under the three major research questions in this study.

5.1.1 Research Question One

The result from the study showed that majority of the respondent are from the south western part of the country followed by Respondents from the South Eastern part of the country, while the respondents from the North Central part of the country have the least number of respondent. We also identified that majority of the respondents are young women within the age group of (15-19) years, In addition, majority of the respondent are married. Christianity accounts for the religion of the largest proportion of the respondents. The highest level of education is secondary education. Thirty five percent of the respondents were unemployed and the percentage distribution of birth interval indicates that larger proportion of the respondent space their birth for 2 to 4 years with followed by those who space their birth for 5 years and above, while the least amount of respondent space their birth for less than a year.

5.1.2 Research Question Two

Findings from this study showed that the independent variables such as wealth index, occupation and educational level of women in urban Nigeria are related to infant mortality in Urban Nigeria. The results further indicated that socio-economic variable such as wealth index, occupation and education are significant predictor to infant mortality in urban Nigeria.

The socio-demographic variables such as age, marital status, ethnicity, religion and birth interval were noted to be related to infant mortality among women. Enough statistical evidence further indicated that some of the socio-demographic variables of women such as age, marital status, ethnicity, birth interval and education are significant predictors of infant mortality in urban Nigeria.

5.1.3 Research Question Three

Information from the interview sessions held with women in Lagos, Nigeria, revealed that the major determinants of infant mortality are short birth interval, mother's age especially young mothers aged between (15-19), low level of education, low income, malnutrition as a result of poverty, ignorance as a result of lack of awareness and also Unhealthy habits by pregnant women.

5.2 Conclusion

The major determinants of infant mortality in urban Nigeria can be attributed to socio-economic and demographic factors such as mother's age, mother's occupation, low educational attainment, marital status, ethnicity and short birth intervals. This are blamed, in part, on government negligence which manifest in lack of family planning programmes to educate women on the importance of birth spacing, Poor enlightenment of women on the usefulness of antenatal care services and lack of trained and re-training of health workers. Information from the interview sessions showed that factors such as poverty, low income short birth spacing, malnutrition and unhealthy habits by pregnant women can be attributed as the major causes of infant mortality in Nigeria.

5.3 Recommendations

Infant mortality rids the society of potential physical, social, and human capital. Fortunately, infant mortality is preventable, if only we will, together as a people, take the future of our children more seriously. For preventing this tragedy, I hereby recommend the following:

1. Fighting Diarrhoea and other diseases associated with infants: The number one cause of infant mortality worldwide has been dehydration from diarrhoea. Diarrhoea is a preventable disease, and although factors such as the mother's level of education, environmental conditions, and political and medical infrastructure contribute to infant mortality, Nigeria has made considerable effort towards putting programmes in place to decrease the rate of children dying from diarrhoea-related causes. In Lagos for instance, many Public Health Centres (PHCs) and Maternal & Child Care Centres (MCCs) offer lessons to mothers on the preparation of the simple Oral Rehydration Solution made using salt, sugar and water. Also, improving access to clean drinking water is a giant step to eliminating diarrhoea and reducing infant mortality.

2. Educating Mothers: Reductions in infant mortality are possible in any stage of a country's development. In fact, advancement in human knowledge is determined by mortality rate reductions. Governments can reduce the mortality rates by addressing the combined need for education, alongside nutrition, and access to basic maternal and infant health services.

3. Encouraging Healthy Pregnancy: Maternal Mortality and Infant Mortality are closely linked, and future problems for mothers and babies can be prevented. For instance, attending regular antenatal care check-ups will help improve the baby's chances of being delivered in safer conditions and surviving. It is important that women of reproductive age adopt healthy behaviours in everyday life. Also, taking folic acid before and during pregnancy, maintaining a healthy diet and weight, regular exercise, quitting tobacco and alcohol can prevent complications

42

and help decrease infant mortality rates. By advising patients about factors that affect birth outcomes, such as maternal smoking, drug and alcohol abuse, poor nutrition, stress, insufficient prenatal care, chronic illness or other medical problems, health care providers can help reduce chances of babies being born at low birth weights

4. Increase in Birth Interval: Parents should be aware of the risk of short birth interval and should therefore space their birth interval by practicing an effective family planning method.

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APPENDIX I

In-depth Interview Guide on the Determinants of Infant Mortality in Urban Centres in Nigeria

CONSENT FORM

I am Ozor Stephen Ugochukwu, a 400 level student from the department of Demography and Social Statistics, Federal University Oye-Ekiti, Ekiti state. I seek your consent to ask you some questions and your response will be of great importance in this research.

Your participation in this research will help improve infant health care and go a long way to reduce and prevent infant mortality in your area, other communities and the whole nation at large.

Note: some of the questions that you will be asked in this research will be very sensitive as it involves questions relating to the infant(s) you lost.

Please if you wish to participate in this research kindly sign below.

Thanks for your cooperation.

SIGNATURE...........................

THE IN-DEPTH INTERVIEW GUIDE WITH WOMEN IN URBAN NIGERIA

Socio demographic characteristics of respondent:

Age..................

Marital status................

Ethnicity...................

Religion....................

Occupation......................

Educational level.....................

1. Tell us your background (general prompt in areas like, number of children and family structure).

2. Tell us about the infant you lost (general prompts in areas of size of baby, sex of baby, date of birth, age of death, method of feeding, vaccination, birth interval between that child and the immediate older sibling)

3. What was diagnosed as the cause of your child's death?

4. During that pregnancy, did you make use of health care services? If not, can you state why, and what would have helped for you to use healthcare services?

5. From your perspective, what can you point out as the major cause of infant mortality?

6. Can you share some ideas on what could be done to prevent and reduce infant mortality?

Thanks so much for your time and cooperation, I really appreciate your perseverance for some of my questions because I know how sensitive some of these questions are to you, once more thank you.

APPENDIX II

KEY INFORMANT INTERVIEW GUIDE (with health workers)

1. Do you recommend pregnant women to utilize health care services? If yes can you tell me why, and what would have helped to encourage the use healthcare services?

2. From your perspective what can you point out as the major cause of infant mortality?

3. Can you share some ideas on what could be done to prevent and reduce infant mortality?

Thank you so much for your time and cooperation, I really appreciate your perseverance for some of my questions because I know how sensitive some of these questions are to you. Once more, thank you.