

**DETERMINANTS OF MORTALITY RATE
AMONG UNDER FIVE CHILDREN IN
NASARAWA STATE**

BY

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DECLARATION

I hereby declare that this thesis was written by me and it is a true record of my research work. Prior to this study this research work has not been submitted for any higher degree. All sources of information are accordingly acknowledged by way of references.

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Date

CERTIFICATION

This thesis titled “Determinants of Mortality Rate Among Under Five Children in Nasarawa state” by Audi Musa Alan meets the regulations governing the award of the degree of Master of Education in Health Education of Ahmadu Bello University, Zaria Nigeria, and it is approved for its contribution to knowledge and literary presentation.

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DEDICATION

In memory of my late Dad and Mum (Mr. Audi Jano and Mrs Ashembugu Audi) who started the foundation of my education but could not reap the fruits of their efforts. Also this work is dedicated to my loving wife and children for their kindness, love, patience, encouragement and moral support.

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ABSTRACT

The health condition of people in Nigeria particularly Nasarawa state is characterized by a high under-five mortality, high fertility rate and low life expectancy (WHO, 2004). The purpose of this study is to find out the determinants of mortality rate among under five children in Nasarawa state.

The questionnaires were administered on randomly selected, stratified samples of 600 respondents which comprised parents (females) and health workers (females). A total of 596 (99.3%) responded to the questionnaires, all of which were retrieved and used for the analysis of the data for this study.

Findings indicated that malaria, diarrhea, anemia, inadequate health facilities, socio-economic status and low educational qualification of parents were the determinants of mortality rate among under five children in Nasarawa state. On the basis of the result, it is recommended that appropriate health education programmes, particularly maternal education be provided to parents. Adequate health facilities and appropriate environmental sanitation education at community level should also be provided. In addition, mothers and children should have access to the provision of health facilities and services by the state.

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OPERATIONAL DEFINITION OF TERMS

Rural Area: An area that has low – level of social amenities such as electricity, pipe borne water, good access road and health facilities.

Urban Area: An area that has high level of social amenities such as electricity, pipe borne water, good access road and health facilities.

Under-five mortality: Death of new born babies between birth and five years of age.

Post Partum Period: Period immediately after child birth.

Under-five Mortality rate: Simply refers to the number of death of children under five years of age per one thousand live births.

ABBREVIATIONS

U5MR	-	Under-five mortality rate
GOBIFFEETH	-	Growth monitoring and promotion, female education, family planning and food, supplementation, Environmental protection, treatment of common diseases and Health Education.
BFHI	-	Baby – Friendly Hospital Initiative
OPV	-	Oral Polio Vaccine
DPT	-	Diphtheria, pertusis, tetanus vaccine
HBV	-	Hepatitis B. Virus Vaccine
BCG	-	Bacillus Calmette – Gueria vaccine
CDD	-	Control of Diarrhoea Dehydration
ORT	-	Oral Rehydration therapy
USAID/NIGERIA	-	United States Agency for International Development / Nigeria
BASIC II/NIGERIA-	-	Basic support for institutionalization of child survival Basic II project.
NDSH	-	Nigeria Demographic and Health Survey.
ECA	-	Economic Commission for Africa
NPC	-	National Population Census
ARIS	-	Acute Respiratory Infections
ICHCS	-	Integrated Child Health Cluster Survey

FGC	-	Female Genital Cutting
EPI	-	Expanded Programme on Immunization
NPI	-	National Programme on Immunization
PHC	-	Primary Health Care
TBA	-	Traditional Birth Attendant
NGO	-	Non – governmental organizations
GAVI	-	Global Alliance for Vaccine and Immunization.

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Nasarawa State is one of the states created on 1st October 1996. The name of the state came as a result of the consensus reached by the people who agitated for its creation, although there were local councils called Nasarawa Eggon local government and Nasarawa Local Government before the creation of the state. The predominant ethnic groups in Nasarawa State are Eggon, Alago, Afo, Kanuri, Migili, Gwandara, Ebira, Hausa – Fulani, Mada, Rindre, Gbagyi, Mama and Tiv. The major religions of the residents are Islam and Christianity, while the main occupations of the inhabitants are farming, petty trading as well as a large population of the people who work in the public service.

Under-five mortality, high fertility and low life expectancy are serious health problems in Nasarawa State and Nigeria in particular and Africa at large.

Child birth in Nigeria should have been a normal process with minimal loss of life as compared to developed countries. However in some parts of the country 25% or more of children under five years of age die before their fifth birthday, which is higher than the developed countries Yakubu (2003).

Health statistics by the Nigerian Fertility Survey (1981 and 1982) indicate the following as reflecting the general poor state of health of the population:

Crude death rate: 16 per 1000 population

Crude birth rate: 50 per 1000 population

Childhood mortality rate: 144 per 1000

Children between age 1 to 4 years.

Infant mortality rate: 85 per 1000 live.

Life expectancy at birth: 50 years.

However, most of the deaths and serious ailments/morbidity which occur among Nigerians are due to conditions which are easily preventable or can be treated with simple remedies. Also, the effects of parasitic diseases associated with inadequate environmental sanitation and poor personal hygiene are often compounded by malnutrition. The lack of timely and appropriate health service/care often increases the risk of serious complications in the course of minor ailments. The recent rate of morbidity and mortality can be substantially reduced by a more rational application of available resources, clean environment and interventions.

Benue State (2004) reveals that poverty, under-development, poor sanitary habits, poor nutrition, bad drinking water and high rate of early marriage in rural areas cause high morbidity. Similarly, Nasarawa State Diseases Surveillance Report (2005) discloses that childhood disease conditions have been the most prevalent causes of morbidity and mortality in the state.

The study does not however identify all the factors, such as illiteracy, socio-economic status of parents, source of medical care, poverty and

environmental diseases that have been linked with under-five mortality in some parts of the country. The attainment of optimal health condition for the child during his/her early years should therefore be one of the best investments that a country makes into the child's life based on the strength of the country's resources. For the child to be able to fulfil his or her vast potentials and abilities is largely dependent on the family, the community and country in which he or she belongs. Yet, tragically, the early childhood years tend to receive the least attention and lowest investment in terms of health or welfare from the state governments.

According to the World Health Organisation (1990) the causes of death among children under-five are morbid condition or disease process, abnormality, injury or poisoning. (WHO 2004).

It is very sad and unfortunate to note that many children still die both at home and in the hospitals in Nasarawa State as a result of the attitude of some mothers in the state. This has serious implications for the under-five with respect to management of serious systematic symptoms of diarrhoea and fever regarded as normal phenomena that must accompany teething and are not viewed as serious enough to warrant medical attention. This is indeed worrisome as some serious childhood illnesses which are unrelated to teething are likely to be left untreated or may not be given the seriousness they deserve. Uti et al(2005).

1.2 STATEMENT OF THE PROBLEM

Under-five mortality (U5M) is a world-wide problem. Several researchers (Sofoluwe 1996, Molineaux et al 1980 and Augustus (2005) have indicated that most children die between birth and five years of age as a result of infectious diseases such as malaria, anemia, diarrhea, and poor sanitary condition.

The under five mortality is considered to be the most sensitive index of the health condition of a community as it is found to correlate with factors such as lack of awareness of child health care services, malnutrition/poverty, socio-economic status of parents, the educational attainment of the parents and the occupation of the parents all which affect the health condition of their children and community (Darmstadt et al (2003), Park 2002). Several health agencies both at the national and international levels, including non governmental agencies across the globe have striven towards combating the menace of under-five mortality (Sofoluwe 1996, Augustus (2005). However, to the best of the knowledge of the researcher no study has been carried out on mortality among under-five children in Nasarawa State. Even where research exists on other parts of the country, very few of such works have placed emphasis on the six childhood killer diseases. Such research believe that it was the role of immunization to control child mortality and control communicable diseases (Oyediran et al 1973, Ogunjuyigbe (2004) and Park 2002). Studies in these areas have not clearly indicated the role played by the socio-economic status and educational level of parents, the

effect of environmental conditions, sources of medical care and malnutrition on the death of children under five in Nasarawa State.

The study was therefore carried out to find out among other things:

- The rate of under-five mortality rate (U5MR) in Nasarawa State
- Factors responsible for under-five mortality in Nasarawa State.
- To find out whether the socio-economic condition and education of the parents affect under-five mortality in Nasarawa State.
- To identify various ways or measures to reduce, if not completely eradicate under-five mortality in the state.
- To find out the sources of medical care embarked upon by parents and how these have contributed to under-five mortality in Nasarawa State.

1.3 RESEARCH QUESTIONS

This research attempts to find answers to the following questions:

1. What are the factors influencing under-five mortality rate in Nasarawa state?
2. Do the illiteracy/low educational level of parents and quality of health care available to them reduce or increase under-five mortality rate in Nasarawa state?

3. What are the prevalent diseases or sickness or prevailing factors influencing under five mortality in Nasarawa state?
4. Do socio-economic status of parents and the nature of their occupation influence under-five mortality rate in Nasarawa state?
5. Do traditional healers help to reduce under-five mortality rate in Nasarawa state?

1.4 RESEARCH HYPOTHESES

On the basis of the research questions, the following hypotheses are formulated for the purpose of this study.

The major hypothesis of this study is that the determinant of mortality rate among under five children in Nasarawa state are not significantly associated to health problems but more to influences of environmental diseases, socio – economic status of parents (poverty), illiteracy of parents, source of child medical care, which create inability of parents (women) to reduce under- five mortality in Nasarawa state.

Sub-hypotheses are:

1. There is no significant association between the influence of environmental diseases and under-five mortality in Nasarawa State
2. There is no significant association between the influence of sources of medical care and under-five mortality in Nasarawa State
3. There is no significant association between the socio-economic status of parents and under-five mortality in Nasarawa State

4. There is no significant association between the influence of illiteracy / low educational level of parents and under-five mortality in Nasarawa State

1.5 BASIC ASSUMPTIONS

On the basis of the available research evidence, the following assumptions were made for the purpose of this study:

1. Infectious diseases are not the determinants of mortality rate among under five children in Nasarawa state.
2. Socio-economic conditions and physical environments are not the determinants of mortality rate among under five children in Nasarawa state.
3. Quality of child health care and poverty do not affect under-five mortality in Nasarawa state.
4. Diagnosis and treatment of infant sicknesses are not the determinants of mortality rate among under five children in Nasarawa state
5. Occupation and level of parents' education do not affect under-five mortality in Nasarawa state.

1.6 PURPOSE OF THE STUDY

The general objective of this study is to investigate the determinants of mortality rate among under five children in Nasarawa state. In order to achieve the objective, the study focuses on the following specific areas:

1. To identify the factors which influence under-five mortality in Nasarawa State.

2. To assess the influence of the socio-economic status and educational levels of parents on under-five mortality in Nasarawa state.
3. To evaluate the commonest source of medical care provided for sick children in Nasarawa state.
4. To create background for further research on the conditions of children who survive or were better and different from their counterparts who die.

1.7 SIGNIFICANCE OF THE STUDY

The result will be widely used for numerous purposes. Thus

1. Provide data that can greatly enhance a better understanding of some of the factors associated with under-five years of age mortality rate in Nasarawa state.
2. Be employed in explaining trends and differences in overall mortality rate among under-five years of age in Nasarawa state.
3. Be used in indicating priorities for health programmes and the allocation of resources.
4. A possible focal-point in designing intervention programmes for child survival in the state.
5. Be used for assessment and monitoring of public health problems and programmes among children under five years of age in Nasarawa state.
6. It would serve as a fertile ground and provide important clues for epidemiological research and other studies.

7. To assist health educators to create community-based awareness for the people.

1.8 DELIMITATION OF THE STUDY

This study is delimited to the following: -

1. The thirteen (13) local government councils of Nasarawa state with administration of questionnaire to investigate the determinants of mortality rate among under five children in the state.
2. Parents (nursing mothers/caretakers) that attend to the sick child before death.
3. The health facilities which consist of health workers, medical records, equipment, and clients of sick children within the period of study.

1.9 LIMITATION OF THE STUDY

The practice of medical certification of deaths is not widespread in the state. Where it does exist, the cause of death is often inaccurate, or incomplete due to such difficulties as lack of diagnostic evidence, and absence of post-mortem. However, because of this shortcoming, in the course of conducting this research, the services of paediatrician were employed to review the medical records of under-five deaths for appropriate and correct data.

The inability of some parents to state the actual cause of their children's death also constituted some form of obstacle to the research. As a matter of fact, most of the deaths occurred at home.

The language barrier constituted a constraint to the respondents in effectively and correctly filling the questionnaires. Six research assistants were trained to assist the respondents to overcome the problem caused by language barrier.

Another limitation was confronted with some women or caretakers who mentioned only symptoms of diseases or risk factors without being able to determine the actual causes of death or without diseases (or risk factors) and conditions which contributed to the patients' death. In this situation, adequate consideration was given during collection and analysis of data as well as during interpretation of results to such gaps in information.

CHAPTER TWO

RELATED LITERATURE REVIEW

2.1 INTRODUCTION

Traditionally, health was taken care of by medicine-men. These medicine-men inherited their knowledge and skills from their parents about herbs, roots, and how to prepare them, which ailments they cured and how to administer them. Traditional healers are found every where. They live close to the people and the treatments they give are based on various combinations of religion, magical powers and empiricism. It was recognised that under traditional health care services, people were exposed to a lot of risks (Park 2002). With the coming of modern medicine, many modern health facilities are available. Nowadays doctors and nurses are relied upon for the cure and prevention of diseases rather than on traditional medicine-men. Modern medicine more than traditional medicine moves faster towards specialization and rational, scientific approach to disease prevention and cure. The pattern of disease began to change with the comprehensive programmes to avoid illnesses or diseases such as acute respiratory infections, cardiovascular diseases, mental illnesses and others, Park (2002). According to UNICEF (2000) young children are largely dependent upon their parents for good health care and survival. Parents or guardians who should have ensured that their children live in a clean environment, eat nourishing foods, protect them from getting sick or contracting childhood diseases such as polio, measles, whooping cough, tuberculosis, malaria, acute respiratory infections and a host of others could not

perform their roles appropriately. That is why many children are exposed to risk factors and preventable causes that affect their health, future and eventually their lives. (UNICEF, 2000), Park (2002).

The purpose of this study was to find out determinants of infant/child mortality rate among children under-five years of age in Nasarawa state.

The available literature on determinants of infant/child mortality rate among children under-five years of age are reviewed under the following sub-headings

- *The concept of mortality rate among under five children.
- * Global perception of infant/child mortality rate.
- *Determinants (causes) of mortality rate among under five children
- *Infant/child, mortality control activities by national and international agencies.
- *Health needs of children under-five years of age as special population.
- *Prevention and control of infant/child mortality rate in Nasarawa state
- *Summary

2.2 THE CONCEPT OF UNDER-FIVE MORTALITY

According to Park (1997), the child mortality rate (death rate) is a more refined indicator of the social situation in a country. This is because it reflects the adverse environmental health hazards such as malnutrition, poor hygiene, infection and accidents as well as economic, educational and cultural characteristics of the family. It has been recognised that the infectious diseases of childhood which include measles, whooping cough, diphtheria, diarrhoea

and acute respiratory infection can lead to high case–fatality rate in malnourished children. UNICEF, (1996), and Augustus, (2005) define under – five mortality rate (U5MR) as the probability of children dying between birth and five (5) years of age, and this can be the best single indicator of social development and well–being, as compared to Park’s (1997) which reflects income, nutrition, health care, basic education and so on. However, infant mortality rate can be expressed as the probability of new born babies dying between birth and age of less than one year. The majority of deaths during birth or at infant result from infections, asphyxia and birth injuries and complication of premature birth (WHO. 2001). Low birth weight contributes to nearly 80 percent of infant mortality and low birth weight babies who survive have an increased risk of developing diseases and learning disabilities (Darmstadt etal (2003), UNICEF (2001). The health of newborn babies and survival through the first 28 days of life are closely linked to the health of the baby’s mother before and during pregnancy, as well as during labour, childbirth and after birth. Therefore, the need of interventions for maintaining women’s health during these times is important as intervention for improving the health and survival of the new born baby, UNICEF (2001). The under-five mortality is calculated by the formula: the figure of deaths of children under-five years of age (from birth to five years) in a given year over the figure of the live births in the same year multiplied by one thousand, Sofoluwe etal (1996).

2.3 GLOBAL PERCEPTION OF UNDER-FIVE MORTALITY

The average global under-five mortality rate (U5MR) declined by 11 percent globally, from 93 deaths in the early 1990s to 83 deaths per 1000 live birth in the year 2000. However, only few or more than 60 countries achieved the targeted one-third reduction. A significant challenge remains in sub-Saharan African, South Asia and the Middle – East and North Africa regions where under – five mortality rates (U5MR) are 175 per 1000, 100 per 1000, and 64 per 1000 respectively. Infant and child mortality remains disturbingly high in developing countries despite the significant decline in most parts of the developed world. The state of the world’s children’s health indicated that about 12.9 million children die every year in the developing world (UNICEF, 1987). The difference in the survival rates of children in developed and developing countries is a pointer to the third world’s needs for preventive services. However, good health care system, breast feeding, adequate nutrition, clean water, immunization programmes, oral re-hydration therapy and birth spacing as well as revolution in child survival could be achieved. (Park, 1997).

In Africa according to the United Nations Economic Commission for Africa ECA (1994), since 1980s, poverty and low socio-economic status have been major problems on which focus has been given. It is estimated that about 220 million Africans, which constitute a reasonable per cent of the population in the continent currently live in absolute poverty and are unable to meet most of their basic needs such as education, shelter, food, health care, sanitation, clothing, and potable water. In addition, there is massive unemployment

problem which created situations like delinquency, crime and social insecurity. Given the prevalent economic situation which has continued to deteriorate, it will not be easy to provide good health care to meet the needs of the children under – five years of age by their parents alone. Therefore they need assistance from governments and other voluntary agencies. ECA (1994).

Nigeria Demographic and Health Survey (NDSH) (1990), reports that 87 of 1000 infants born in Nigeria die before their first birthday while 115 of 1000 children die before reaching the age of five. In the five years after the 1999 to 2003 survey the infant mortality rate was 100 deaths per 1000 live births, National Population Census (NPC) (2004). Infant and child mortality rates in Nigeria have significantly improved than the average of 34 percent for the sub – Saharan African region, NDSH (1990).

In spite of the reality that the main childhood killer diseases such as malaria, measles, diarrhoea and acute respiratory infections (ARIS) have been discovered and modern technologies and resources put in place to fight them, children from Nigeria die in large figures from attacks of these endemic infectious diseases. The reasons may be traced back to the people's belief and attitudes concerning child care as well as behavioural practices towards health initiative programmes. Adetokunbo et al (2003) and Ogunjuyigbe (2004) stress that traditionally medicine men were those responsible for the health of the community. These medicine-men sometimes perceive and suspect the signs and symptoms of infectious diseases as a punishment for breaking family taboos or as an evil deed from witches or enemies. Also some nursing mothers

diagnosed diarrhoea on their crawling children as a sign of teething. Furthermore taboos are stronger in rural areas than urban areas as a result of low level of modern ideas and ignorance. Addressing this challenge will require more training, and improvement in knowledge and maternal education.

2.4 DETERMINANTS OF MORTALITY RATE AMONG UNDER FIVE CHILDREN.

The type of family unit, whether nuclear or extended, serves as home / primary agencies of socialization and institution for children or child rearing / care. This is because the African culture describes the roles of parents for the child. A father is the head of the family and he provides basic needs like shelter, food, medical care as well as emotional and psychological support for the family while the mother is expected to provide physical or health care services like cleanliness, the much needed love and attention for the child's physiological, emotional growth and development, Mary and Don (1994)

According to UNICEF (2000), no child should be deprived of his or her right to health care services in order to reduce infant and child mortality. As some parents or care givers make efforts to play their significant role to provide adequate quality health care for their children some parents or caretakers seem incapable either overtly or covertly to discharge this fundamental obligation due to certain situations they found themselves. Therefore meeting the needs of these children is grossly inadequate and children who are relying on their parents for health care services will not enjoy good health care and survival UNICEF, (2000). Bassir, (1973) submits that medical practice has to do with

life. For instance, curative and preventive medicine deals with the maintenance and preservation of life. It is unfortunate that our hospitals are grossly understaffed, laboratories and other modern technical services do not exist in the vast majority of hospitals in rural areas and drugs are in short supply. At times surgery is performed in non-sterile conditions in rural areas and recovery is invariably complicated by environmental factors. It is against this background which is complicated by corruption that the poor masses have to face the consequences of morbidity and mortality in our communities. UNICEF (2000) and Bassir (1973).

SOME HEALTH PROBLEMS THAT CAUSE CHILD MORTALITY AND MORBIDITY

Health problems are multifarious. The factors which influence health lie both within the individual and externally in the environment /society in which he/ she lives (Parks 2002). The health problems include disease / poor hygiene, poverty/socio-economic circumstance, malnutrition, low-education/maternal education, cultural characteristics, occupation and accident/injury. Thus for the purpose of this research the following health problems are discussed briefly to aid understanding of the concept viz:

2.4.1 Disease / Poor Hygiene

Poor hygiene is an enabling environment for the spread of infectious diseases. Ogunjuyigbe (2004). Mary (1990) maintains that the common causes of child mortality and morbidity in Nigeria include malaria, diarrhoea, acute

respiratory infections, measles, tuberculosis, and tetanus. Infants and children who have lost the immunity transferred from their mothers stand the risk of serious malaria attack. Malaria is suspected to claim lives of children between 10 and 30 in every thousand infants and children. Moreover about 20 – 30% of infants' deaths in Garki of Nigeria are caused by malaria (Molineaux et al 1980). Diarrhoea is a condition in which faeces are watery and expelled frequently, it can occur as food moves rapidly through the intestine. Change in diet, food poisoning, over-eating, emotional turmoil, nutritional deficiencies, viral and bacterial infections are all causative factors for diarrhoea, MCC (1985).

Diarrhoea which brings about dehydration is one of the commonest causes of severe mortality of children in developing countries. The highest risk of mortality is among the families of low socio – economic status, poor personal and domestic hygiene, low maternal education. Infants that are not breastfed, malnourished infants or those with low birth weights are equally at risk of mortality and morbidity, (Huttly et al 1987) and Shapiro et al (1980).

Acute respiratory infection (ARIS) has been identified as a leading cause of death in the developing countries. It has caused about 2.3 million deaths annually. The prevailing known causes of ARIS mortality are bacterial and viral pneumonia, measles and pertussis (Ngalikpima 1983). Measles which is highly infectious is transmitted by respiratory route while unprotected children in the developing countries can easily be affected as a result of which about 1 – 5% will die of measles and its complications. The severity of measles

leads to mortality or disability Bast etal (1990). Tuberculosis is caused by mycobacterium and it accounts for 3% of total infants / child mortality. Tetanus is caused by anaerobic baculums clostridium tetanus due to poor hygiene, especially during delivery leading to tetanus neo natarum. It kills its victim before they are old enough to be registered. It kills about 750, 000 new born annually in the developing countries (Ogunjuyigbe, 2004).

2.4.2 Poverty / Socio-Economic Status

Socio economic conditions refer to the income and background of an individual. This is a powerful recognised factor that influences human health. The health status of a person is primarily determined by his/her purchasing power, education, nutrition, employment, sanitation, housing and the political system of the country. The economic status also determines the standard of living, quality of life, family size, pattern of disease and deviant behaviour in the community. According to Park (2002) of the most important factors affecting mortality rates both directly and indirectly the socio-economic status of the individual is the most salient. The availability and quality of health care as well as the nature of the child's environment are closely related to socio economic status. Statistics revealed that infant mortality rates are highest in the slums and lowest in the richer residential localities. Major improvements in health status and a decrease in infant mortality require continuing socio-economic development including provision of health services.

Frank et al (2004) reported that in Mexico, socio economic factors are important forces in determining health risks which indirectly contribute to the incidence of low birth weight of an infant along with other more proximate factors, such as behavioural or maternal lifestyle characteristics. These behaviours are influenced by socio-economic background factors to the extent that social position affects the ability to control everyday life circumstances and influences major behaviours that influence birth weight which include: drug and alcohol use, cigarette smoking, diet and nutrition, exercise, stress levels, vitamin use and prenatal care. Maternal lifestyle choices affect health largely through biological pathways. For this reason maternal health should be given much attention, because low birth weight contributes to nearly eighty (80) percent of new born deaths. Even low birth weight babies who survive have an increased risk of developing diseases and learning disabilities (Darmstadt 2003 and UNICEF 2001).

2.4.3 Malnutrition

Malnutrition implies a condition resulting from a relative or absolute deficiency or excess of one or more essential nutrients. This consists of four forms such as under nutrition, over nutrition, imbalance and specific deficiency. Under nutrition is a condition in which insufficient food is eaten over an extended period of time whereas overfeeding is a situation whereby an individual takes more than the required quantity of food over a length of time. Imbalance is the disproportion among essential nutrients with or without

absolute deficiency of any nutrient and specific deficiency results from relative or absolute lack of an individual nutrient. Sofoluwe et al (1996).

Malnutrition is largely associated with various factors which include poverty, ignorance, insufficient education, inadequate knowledge in respect of the nutritive value of foods, poor sanitary conditions, large family size, infectious diseases and cultural influence. Mary and Don (1994). As malnutrition is the outcome of several factors the problems can be solved simultaneously by taking action at various levels such as family, community, national and international level through enlightenment campaigns and comprehensive programmes Park (2002). Moreover, the cultivation of poor nutritional habits in early infancy has serious impact on the growth of children and presents added risk factors for non-communicable and cardiovascular diseases later in life (WHO 2005). Child health literature indicates that infants who are exclusively breastfed in the first six months of life have a lower risk of mortality and morbidity associated with childhood illnesses (acute respiratory infection, diarrhoea and fever) than those who are not exclusively breastfed (WHO 2001). Malnutrition has been noted as an underlying cause of 40 – 50 percent of all under-five deaths in West Africa (Serah et al 2001).

The integrated child health cluster survey (ICHCS 2002) indicates that infants and child feeding in Nigeria largely reflects adult eating patterns, high starchy diet with few fruits, vegetables or protein sources. Mothers need to know that children should be given adequate diets to promote healthy growth UNICEF, (2000). Children's nutrition was not viewed as a priority problem by

farm workers with poor working conditions and low salaries. They do not attach higher priority to family foods and health care for children. An unhealthy child is described as dirty, sick, and thin, eats cold food, is miserable and has a potbelly (WHO 2004).

2.4.4 Low Education / Illiteracy

According to Park (2002) the world map of illiteracy closely coincides with the maps of poverty, malnutrition, ill health, high under-five mortality. However, to some extent, female education compensates the effects of poverty on health irrespective of the availability of health facilities. Ofili et al (2005), on the basis of their study of the role of traditional birth attendants in maternal health care in Edo state argue that the status of education of parents is significantly related to the death of the children. They submit that illiteracy is the greatest barrier to any improvement in health condition. The untrained midwife or traditional birth attendant (TBA) is greatly responsible for high infant/child mortality. She is usually an illiterate person devoid of all knowledge of the rules of hygiene. Her unhygienic delivery practice is an important cause of high infant mortality.

Adebayo et al (2005) argue that low literacy is a source of shame and constitute difficulty in attaining the complex task of health care. The parents that have low-education found it not easy to understand instructions and administer appropriate treatment to their children or compliance to instruction from doctor. One third of the surveyed women were not able to recognise two

or more signs of illness which are associated with fever, requiring prompt care-seeking. Delays in treatment provide opportunity for simple illnesses to become severe (USAID 2001, BASIC II / FGN, 2002).

2.4.5 Cultural and Behavioural Characteristics

The concept of cultural and behavioural characteristics is used here to denote the way people live or lifestyle reflecting a whole range of social values, attitudes and activities. It is composed of cultural heritage, behavioural pattern and life long personal habits such as traditional health care, smoking and alcoholism that affect health and which are developed through the process of socialization. Lifestyles are learnt through social interaction with parents, peer groups, friends, siblings, the mass media and others (Park 2002).

A number of traditional and cultural practices in Nigeria infringe on the reproductive rights of Nigerian women, the girl – child and other children (male). The most common of these include female genital mutilation (FGM) early / forced marriage, and denial of eating of some protein foods. According to Amaeshi (2002) risk factors related to the health of the mother and child found to be associated with the nutritional status of the child include the low birth weight of the child, the incidence of illness in the child and malnutrition in the mother. According to Serah et al (2001) maternal education is associated with better nutritional status in households of average resources but not in those with high and low levels of income. Increase in maternal education has a positive association with the nutritional status and good health of young

children. Ogunjuyigbe (2004) opines that there should be integration of people's beliefs and attitudes concerning childcare and behavioural practices into health strategies that is shifting in human values and behaviour.

2.5 UNDER-FIVE MORTALITY CONTROL ACTIVITIES BY INTERNATIONAL AND NATIONAL AGENCIES

Annually, out of 20 million children born in Africa, 4 million die before their fifth birthdays, majority of them as a result of preventable diseases. Therefore various health programmes are established in both developed and developing countries through the efforts of various national and international governmental and non-governmental bodies (NGOS) to address the health problems., Adetokumbo etal (2003). The health programmes include: child survival strategies, primary health care (PHC), expanded programme on immunization (EPI), control of acute respiratory infection (ARI's) programme, and baby friendly hospital initiative (BFHI).

2.5.1 The Child Survival Strategies

The child survival strategies being part of UNICEF programme are believed to be affordable and available to nations, communities and individuals for the reduction of morbidity and mortality. The first four activities of the programmes include growth monitoring and promotion, oral rehydration therapy, breastfeeding and immunization (GOBI). Other components such as female education, family planning and food supplementation were added. The

strategies were further expanded to include Primary Health Care (PHC) activities such as environmental protection and adequate sanitation, essential drugs programme, treatment of common diseases and health education. The joint components led to the acronym (GOBIFFEETH) Mary Land (1990).

From health demography (statistics of birth, deaths, and diseases), the implementation of these activities (components) is not yet satisfactory because, some of these activities have not reached most of the rural areas of Nigeria. Moreover this is only based on speculations and opinions from media – houses in some urban and semi urban areas of the country. Adetokunbo et al (2003).

2.5.2 The Primary Health Care (PHC)

At the 1978 Alma-Ata international conference in the USSR, participants declared the aim to achieve health for all by the year 2000 in all the countries. Nigeria launched her own version of the declaration in 1986 with 10 components, namely:

- a. Promotion of effective nutrition
- b. Adequate supply of safe water
- c. Basic sanitation
- d. Maternal and child health care and family planning.
- e. Immunization against major infectious diseases.
- f. Health education
- g. Appropriate treatment of common diseases and injuries
- h. Provision of essential drugs

- i. Mental health
- j. Dental health.

PHC is the first level of contact of individuals, family and community with the national systems of bringing health care services close to where people live and work. The provision of PHC centres in many communities in Nigeria has not completely solved the health problems since many of the communities in Nigeria are lacking health facilities and where PHC exists there are no adequate staff, drugs, or equipment because of financial constraints. Sofoluwe et al (1996).

2.5.3 Expanded Programme on Immunization (EPI) and National Programme on Immunization (NPI)

The immunization programme is aimed at controlling the six-killer, vaccine-preventable diseases such as measles, tetanus, tuberculosis, diphtheria, pertussis and poliomyelitis. The programme has only assisted to reduce several thousands of deaths in developing countries where people are fully aware and participate in the immunization programme successfully. Park (2002). Sofoluwe et al (1996) The implementation of this control programme and the management of the six killer diseases by the federal government of Nigeria in collaboration with international agencies like UNICEF, WHO has helped to identify areas with health problems like epidemic and endemic diseases as well as promotion of welfare of human resources. It has also improved on the life-expectancy of Nigerian children.

However, in Nigeria, some of these vaccines such as oral polio vaccine (OPV) diphtheria pertussis, tetanus vaccine (DPT) Hepatitis B. virus vaccine (HBV) Bacillus calmette – Gueria vaccine (BCG) control of diarrhoea programme (CDD) through oral – rehydration therapy (ORT) have cut-across the country with a lot of constraints. The several factors which account for the constraint to immunization coverage include:

- a. No adequate skilled manpower
- b. Lack of enough funds
- c. Lack of record keeping (card retention)by care takers
- d. Lack of proper maintenance of immunization registers at health facilities.

The demand for improved quality of service at health facility levels and home vaccination could be met favourably if uninterrupted vaccine supply by government can be guaranteed and solution to above mentioned constraints is in place. Sofoluwe G. O et al (1996)

2.5.4 The Control of Acute Respiratory Infections (ARIS)

There are several microbial agents causing acute respiratory infectious diseases. These include bacterial and viruses.

The young children can succumb to the disease within a short time and fatality rates are usually high among infants and malnourished children. Adetokunbo etal (2003).

Risk factors of respiratory tract infection include climatic conditions, housing, level of industrialization and socio-economic development.

Furthermore, in developing countries, over crowded dwellings, poor nutrition, low birth weight and intense indoor smoke can constitute risk factors. Mary and Don (1994).

Acute respiratory infection (ARIS) programme was established by WHO as a measure of reducing acute respiratory infection associated with morbidity and mortality in all the countries where infant mortality rates exceeded 40 in every 1000 live births WHO (1984). But the diagnostic facilities are few or non-existent and diagnosis has to depend on clinical judgement. The control of acute respiratory infections can include:

- i. Elimination of human and animal reservoirs
- ii. Disinfection of floors and the elimination of dust.
- iii. Air hygiene and good ventilation
- iv. Avoid over crowding in bedroom and public places
- v. Personal hygiene and avoid coughing, sneezing, spitting or talking directly at the face of other persons.
- vi. The victim of acute respiratory infection should be isolated to avoid contamination of the environment
- vii. There should be specific immunization for measles, dry-cough and influenza etc.

2.5.5 The Baby – Friendly Hospital Initiative (BFHI)

The baby – friendly hospital initiative (BFHI) was established around 1990s to check the declining trend in breastfeeding. Its main aims are

promoting, protecting and supporting breastfeeding for at least the first two years of a child's life by educating and encouraging the mothers to give breast milk alone for the first six months of life and there after to continue breastfeeding with addition of other foods WHO (1989).

The high cost of standard of living in Nigeria forces mothers to take up jobs outside their homes to supplement family income. The changes in patterns of family life and westernization have affected the traditional source of child-care and exclusive breast feeding. In fact most of the mothers who actively engage in economic activities outside their homes have little or no time to give only breast milk to their children for the first six months. Consequently there is a greater demand to substitute milk or find alternative means of caring for children.

Many mothers, particularly the illiterate women in the rural areas of Nigeria, are not aware of exclusive breastfeeding. Now among the most illiterate mothers in rural areas, a baby's cry is always a signal of hunger and a demand for food. Whenever the baby cries, the mother drops whatever she may be doing at that moment and takes the baby up and puts him or her to her breast. When the baby has taken a little breast-milk and has stopped crying, the mother would give the baby pap to induce him/her to sleep, Sofolowe et al (1996). This means that most of the mothers particularly in the rural areas of Nigeria do not practice exclusive breast-feeding under this programme (Baby-friendly hospital initiative) because of ignorance, poverty, and lack of education.

2.5.6 The World Health Summit for Children 1990

The problem of under-five mortality has attracted both international and national attention. A total of 159 government representatives committed themselves to the joint declaration and plan of action of the World Health Summit on behalf of the world's children health and life expectancy. As cited by executive director James P. Grant UNICEF (2000) about 71 presidents and prime ministers met in New York USA on September 30th 1990 for the first world summit to find solution to the death of children from malnutrition by the year 2000 and also to provide protection for the physical and mental development of children in the world, in addition to reducing the ratio of mortality, diseases and illiteracy. UNICEF (2001) stresses that the ideals of these international conventions on the right and welfare of the child were reinforced and complimented by African countries in 1990 with the declaration of the rights and welfare of the child. The purpose of these world declarations was for the survival, protection and development of children, with a plan of action, a global goal for children by the year 2000 (UNICEF, 2001).

2.6 HEALTH NEEDS OF CHILDREN UNDER – FIVE YEARS OF AGE AS SPECIAL POPULATION

Historically, children were regarded as a special group. But according to the new development perspective, children are not another cause. They were part of every cause. Among the hungry, the sick, the ill-fed, the poorly clothed, the homeless, the jobless, the illiterate and the destitute there are always

children. In view of this, children could never be treated in isolation from their parents and families and especially not from their mothers unless they were orphaned or abandoned. UNICEF Report (2005).

According to the Maternal and Child Health Policy (1978) declaration, children are the promise and future of every nation; investing in children's health and development means investing in the future of a nation. Moreover children are a vulnerable group whose needs and rights, including the right to health and development must be protected,. Child health is a critical issue of concern to everyone whether at the level of the family, the community, the nation or the international community. The international community and individual countries have repeatedly made efforts to improve child's health. Therefore, these efforts need to be intensified, if the silent tragedy of preventable death, illness, disability and impaired psychosocial development among children is to be avoided and if the quality of life of children is to be improved.

The ideas about infant care vary widely and reflect a person's culture. The culture of a community is reflected in infant care whereby mothers keep constant physical contact with their babies in whatever they do. For example they allow the babies to be nursed when they wish and encourage them to explore their surroundings. In a group that emphasizes on individuality a child is frequently encouraged to sleep alone and the child may be put in a place to interact with objects by him or herself. The basic things children need are

serious attention from their parents, protection, shelter, nutrition, clothing, personal hygiene, health care services, Mary and Don (1994).

2.7 PREVENTION AND CONTROL OF UNDER-FIVE MORTALITY IN NIGERIA AND NASARAWA STATE

In Nigeria despite the United States Agency for International Development / Nigeria's (USAID/NIGERIA) support efforts to improve maternal and child health practices through the Basic Support for Institutionalizing Child Survival (Basic II) project to eradicate polio and child survival which is focused on routine immunization, nutrition, and malaria treatment and prevention, the millions of children and women have yet to be protected against preventable causes of death particularly in rural areas. There still exists little or no healthcare for mothers during pregnancy, as well as inadequate birthing (labour) conditions for most mothers.

It is important to bear in mind that closely spaced children will experience risk of mortality as there may be competition among them from their parents for health care, and nutrition. Furthermore infants/child mortality risks will be aggravated with cultural and traditional practices of taking herbal concoction by children without appropriate dosage and hygiene.

So far various efforts made to control and eradicate some infectious diseases such as poliomyelitis, measles, tuberculosis and malaria in Nasarawa state include the immunization programme against some infectious diseases which has been established in primary health centres and maternity centres. In addition some ad hoc staff are employed to administer immunization to

children from house to house. Furthermore, some of the mothers and caretakers attend maternity centres and primary health care centres for prenatal and post natal care at the beginning of every month.

Also the control programme of sensitization and awareness campaigns for HIV/AIDS which serves as a threat to the survival of people in the universe, have commenced in the state.

Many people in Nasarawa state, especially rural dwellers, do not have easy access to hospital facilities or medical centre as a result of which they travel long distances, usually by foot or on bike to seek medical attention when they fall sick. Many of the available clinics or health care centres are sub-standard. They do not have adequate and competent medical staff or enough quality drugs. Another serious problem is that even where hospitals and clinics exist many people can not afford the high cost of medical treatment whereas the right to health requires taking deliberate steps to making health facilities and services more available, accessible and of better quality to people.

2.8 SUMMARY

In the past the research investigation on the causes as well as preventive strategies against child mortality was largely focused on maternal and child health programme and ignored some influential or associated factors which include parental education (community education), socio – economic status of parents, malnutrition, cultural belief and traditional behavioural practices of the community.

Health systems can not function effectively without well trained personnel. For instance, research has shown that traditional birth attendants (TBAS) with formal education treated cord stumps more appropriately than TBAS with no formal education. Poor cord management showed strongest association with neonatal tetanus mortality in a study in Northern Nigeria. The several illness affecting mother and child either during or after childbirth were found to be due to poor birth hygiene conditions and harmful cultural and traditional practices. Neonatal tetanus is a leading cause of infant mortality in developing countries. Offili et al (2005).

Serah et al (2001) affirm that a significant proportion of infants or children are unfit to cope with growth, development and low birth weight resulting from protein and energy malnutrition. Maternal education is associated with better nutritional status in households of average resources. Malnutrition is noted as the underlying cause of 40 to 50 percent of all under-five deaths in West Africa.

Ogunjuyegbe (2004) argues that the common causes of child mortality and morbidity in Nigeria include malaria, diarrhoea, acute respiratory infections, measles, tuberculosis and tetanus.

Moreover Agu (2005) elaborates that in the tropic, malaria is estimated to claim about 750, 000 lives of children with highest deaths in the age group of 1 – 4 years of age. It is one of the leading causes of illness and mortality in children less than 5 year of age in Nigeria. Cultural beliefs and ignorance

associated with poor health services accounted for childhood mortality due to malaria.

Finally socio-economic factor is a strong driving force in determining health risks which indirectly contribute to the incidence of low birth weight of the infant. (Darmstadt (2003) and UNICEF (2001)

CHAPTER THREE

METHODOLOGY

3.1 INTRODUCTION

Nasarawa State has thirteen (13) local government areas with a projected population of 1.2 million from the 1991 census. It is made up of the following three geo-political senatorial districts.

- a. South Senatorial District - Lafia
- b. North Central Senatorial District - Akwanga
- c. Western Senatorial District - Keffi

The framework of this study includes research design, population, sample size and sampling techniques, instrumentation, validation of the instrument, data collection and statistical techniques which are described below in this chapter.

3.2 RESEARCH DESIGN

The study was conducted to ascertain the determinants of mortality rate among under five children in Nasarawa State. Therefore, ex-post facto research design was adopted to collect the information needed to test the hypotheses of this study.

In this design, the information associated with the determinants influencing under-five mortality is already available. The information was collected and analyzed to answer the research questions and to test the hypotheses of the study.

3.3 POPULATION

The study population comprises all health workers (females) and parents (females of reproductive age group) on scheduled visit to health institutions for prenatal and postnatal care.

Nasarawa State has thirteen (13) functional government general hospitals including the Specialist Hospital Lafia and the Federal Medical Centre (FMC) Keffi.

From each stratum, one government general hospital or maternity centre/ward considered as the health institution in a local government area (LGA) was selected at random. In the process of the selection all the local government headquarters in each stratum were given numbers from which four (4) numbers were randomly selected by way of dips and picks from the South Senatorial Zone being the largest and having the highest number of government general hospitals while three (3) numbers each were selected from the North-Central and Western Senatorial zones blind-foldedly. Thus a total of ten (10) local government areas were selected from the population of 1,200 health workers (females) and parents (females of reproductive age) on scheduled visit to the health institutions. This means that all female health workers and female parents in the selected hospital of Nasarawa state. Thus the distribution total number of both female parents and female health workers in each of the ten (10) chosen health institutions in Nasarawa state during antenatal and postnatal care are as follows:

Lafia 100, Obi 100, Awe 100, Doma 100, Akwanga 200, Nasarawa /Eggon 100, Wamba 100, Keffi 200, Nass 100, Toto 100, and the overall total is 1,200 as the study population.

3.4 SAMPLE SIZE AND SAMPLING TECHNIQUE

Stratification by location of health institution was conducted. To ensure adequate representation various factors were considered to stratify the population prior to selection. These factors include: location of health institution in the state, number of government general hospitals, number of health workers (females) in general hospitals (maternity clinics), and number of subjects on scheduled visit. For the final selection of the 600 subjects, simple random sample was used by way of balloting. A minimum sample size of six hundred (600) respondents was randomly selected. According to Roscoe (1969) a sample size of 500 respondents is a standard sample size of any population. Also Morgan and Krejuie (1970) submit that a population of one million could have a 384-respondent sample size. Therefore 600 respondents created room for any addition or increment in population.

Table 3.1 proportionate stratified sampling

Health institution	Lafia	Obi	Awe	Doma	Akwanga	N/Eggon	Wamba	Keffi	Nass	Toto	Overall Total No.
Population	100	100	100	100	200	100	100	200	100	100	1,200
Sample Size	50	50	50	50	100	50	50	100	50	50	600

3.5 INSTRUMENT

The standardized questionnaire that contained four sections with 37 statements was used to collect information from respondents. One section deals with personal data, another section focuses on factors influencing the death of under-five children, a third section deals mainly with health facilities for health workers while the fourth section deals with quality health care by mothers and environmental sanitation.

3.6 VALIDATION

The researcher designed questionnaire with relevant items and submitted to the supervisor, professionals, and experts for vetting. The judgment and decision of the experts and professionals were reflected on the questionnaire for face and content validity.

3.7 DATA COLLECTION

The investigator and research assistants who had been adequately briefed distributed the questionnaires to the selected subjects in the health institutions. Response rate was 99 percent at control situation.

Table 3.1 Administration of questionnaire to the chosen sample for the study

Lga (senatorial Headquarters)	Health institution	Questionnaires administered	Health workers (female)	Female (parents)	Return
Lafia	General/ Specialist Hospital Lafia	50	10	40	50
	General Hospital/ Maternity Doma	50	10	40	50
	General Hospital/ Maternity Obi	50	10	40	50
	General Hospital/ Maternity Awe	50	10	40	50
Akwanga	General Hospital/ Maternity Akwanga	100	20	80	98
	General Hospital/ Maternity Nass/Eggon	50	10	40	50
	General Hospital/ Maternity Wamba	50	10	40	50
Keffi	General Hospital/ FMC Keffi	100	20	80	98
	General Hospital/ Maternity Nasarawa	50	10	40	50
	General Hospital/ Maternity Toto	50	10	40	50

3.8 STATISTICAL TECHNIQUES

After the data had been collected it was analyzed at the Data Processing Unit of the Institute of Agricultural Research, Ahmad Bello University, Zaira. Statistical Package for Social Science (SPSS) was used for the analysis. The descriptive statistics of frequencies and percentage were calculated. The non parametric statistical technique of chi-square using nominal scale of measurement was used to test the strength/significant association between the variables stated. All the hypotheses were tested for acceptance or rejection at $\alpha=0.05$ level of

significance. **CHAPTER FOUR**

RESULTS AND DISCUSSION

4.1 INTRODUCTION

The purpose of this study was to investigate the determinants of mortality rate among under five children in Nasarawa State. To achieve this purpose, the data obtained in the study was analysed and computed using descriptive statistics and chi-square statistics. The results are presented in this chapter.

4.2 DATA PRESENTATION

A total of 596 questionnaires were retrieved out of 600 questionnaires administered on 600 respondents (99.3%). The 596 respondents consisted of health workers (females) and women (mothers) ages 15 -41 years and above.

The distribution of the questionnaire by characteristics of respondents is presented in Table 4.2.01.

TABLE 4.2.1 CHARACTERISTICS OF RESPONDENTS

VARIABLE	CLASS	FREQUENCY	PERCENT
Age	15-20	200	33.6
	21-30	250	42.0
	31-40	96	16.1
	41-above	50	8.3
		596	100
Sex	Male	Nil	
	Female	596	100
		596	100
Marital status	Married	300	50.3
	Single	56	9.4
	Separated	100	16.8
	Divorced	140	23.5
		596	100
Education qualification	Adult literacy	200	33.5
	Quranic school	50	8.4
	Primary Education	150	25.2
	Secondary Education	100	16.8
	Post Secondary Education	96	16.10
			596
Occupation	House wife/ farming	206	34.6
	Civil servant	50	8.3
	Health worker	100	16.8
	Petty business	200	33.5
	Others	40	6.7
		596	100
Location	Urban Areas	196	32.9
	Rural areas	400	67.1
		596	100
Socio-Economic Status	High-income	90	15.10
	Middle –income	206	34.6
	Low-income	300	50.3
		596	100

BACKGROUND CHARACTERISTICS OF RESPONDENTS

Majority of the respondents 250 (42.0%) were females most of whom are active child bearing women between the ages of 21 and 30 years. Also, most of the respondents 200 (33.6%) who were young mothers of children fall between the ages of 15 to 20 years while other respondents 96 (16.1%), 50 (8.3%) were between the ages of 31-40 years and 41 and above respectively.

The highest number 300 (50.3%) of respondents were married. While others fall within the following categories: divorced 140 (23.5%) separated 100 (16.8%) and single 56 (9.4%).

A large number 200 (33.5 %) of respondents had adult literacy education and 150 (25.2%) had primary school education. The other respondents are distributed according to their levels of education as follows: secondary school education 100 (16.8%), post secondary school education 96 (16.1%) and Quranic school education 50 (8.4%).

A significant number 206 (34.6%) were farmers and full house-wives 200 (33.5%), 100 (16.8%), 50 (8.3%) 40 (6.7%) were petty business women, health workers and civil servants respectively.

Majority of the respondents 400 (67.1%) were from rural areas while 196 (32.9%) of the respondents were from urban areas.

A large number, 300 (50.3%) of the respondents were low-income earners and therefore low in socio-economic status. This category of respondents earns less than the equivalent of one United States dollars per day while 206 (34.6%) respondents were middle income class who earn one dollar

per day in Nigeria and 90 (15.10) respondents were high-income earners and are therefore of high socio-economic status who earn more than one dollar per day.

Table 4.2.2 HEALTH WORKERS ONLY

VARIABLE	CLASS	FREQUENCY	PERCENT
Health institution	Number of children that loss their life in, Health institution	400	67.11
Factors influencing under five mortality	Diarrhea	150	25.2
	Anaemia	66	11.1
	Malaria	200	33.5
	Measles	50	8.4
	Pneumonia	40	6.7
	Malnutrition	60	10.1
	Others	30	5.0
		596	100
Sign (s) of illness	Fever/high temperature	120	20.1
	Not eating/drinking well	200	33.6
	Repeated watery stool	180	30.2
	Difficulty in breath	50	8.4
	Other	46	7.7
		596	100
Do vaccine reduce Under five mortality	Yes	300	50.3
	No	296	49.7
		596	100

HEALTH WORKERS

A total number of 400 (67.11%) of children under five years were

recorded to have lost their lives in the health institution between 2005/2006.

A large number, 200 (33.5%) of respondents indicated that malaria was the factor that caused the under-five mortality in Nasarawa State while 150 (25.2%) of the respondents revealed that diarrhea was the factor that influenced under-five mortality.

Other low number of respondents reported that anemia 66 (11.1%) malnutrition 60 (10.1%), measles 50 (8.4%) and others 30 (5.0%) were the causes of under-five mortality in the state.

Majority of the respondents, 200 (33.6%) showed that fever/high temperature was the cause of under-five mortality while 180 (30.2%) of the respondents indicated that repeated watery stool was the cause of under-five mortality while 50 (8.4%) submit that difficulty in breath was a sign of under-five mortality. In addition, 46 (7.7%) pointed out that other ailments were responsible.

A significant number, 300 (50.3%) of respondents indicated that vaccine reduces under-five mortality while 296 (49.7%) did not accept that vaccine reduces under-five mortality in Nasarawa State.

Table 4.2.3 HEALTH FACILITIES BY PARENTS

VARIABLE	CLASS	FREQUENCY	PERCENT
Where do you seek for medical care?	Traditional healers	200	33.6
	Religious healers	46	7.7
	Health facilities	250	41.9
	Chemists	100	16.8
		596	100
Availability of Health facilities	Adequate	200	33.6
	Inadequate	396	66.4
		596	100
Medical fees	Very high	250	42.0
	High	300	50.3
	Moderate	46	7.7
		596	100
Distance from home to maternity centre is more than 2km	Yes	450	75.5
	No	156	24.5
		596	100
Do you adequately receive antenatal/ postnatal care	Yes	100	16.8
	No	496	83.2
		596	100
Any regular medical check up of the child?	Yes	196	32.9
	No	400	67.1
		596	100
Any prompt medical attention for the sick child?	Yes	200	33.6
	No	396	66.4
		596	100

HEALTH FACILITIES BY PARENTS

A large number, 250 (41.9%) of respondents sought for medical care services in health facilities and 200 (33.6%) of respondents sought for medical care services from traditional healers while 100 (16.8%) and 46 (7.7%) of the respondents sought for medical care services from chemists and religious healers respectively.

A significant number, 396 (66.4%) of respondents disclosed that

availability of health facilities was inadequate while 200 (33.6%) respondents showed that health facilities were adequate.

Majority of the respondents, 300 (50.3%) complained that medical fees were high while 250 (42.0%) respondents indicated that medical fees were very high and a few number, 46 (7.7%) of respondents pointed out that medical fees were moderate.

A large number, 450 (75.5%) of respondents affirmed that the distance from home to maternity centre is more than 2kms while few number 146 (24.5%) of respondents did not accept that the distance from home to maternity centre is more than 2kms.

Majority of respondents 496 (83.2%) did not adequately receive antenatal/ postnatal care while 100 (16.8%) respondents adequately received antenatal/postnatal care.

A significant number 400 (67.1%) of the respondents did not have any regular medical check up of the child while 196 (32.9%) of respondents had regular medical checkup of the child.

A large number, 396 (66.4%) of respondents did not have prompt medical attention for the sick child while few number, 200 (33.6%) had prompt medical attention for the sick child.

Table 4.2.4 QUALITY OF CHILD HEALTH CARE**Practising of Child Health Care by Mothers**

VARIABLE	CLASS	FREQUENCY	PERCENT
Prevailing feeding of the child	Carbohydrate	300	50.3
	Protein	50	8.4
	Balanced –diet	200	33.6
	Vitamin	46	7.7
		596	100
Do cultural activities influence the child's health	Yes	380	63.8
	No	216	36.2
		596	100
Do you know about exclusive breast feeding	Yes	350	58.7
	No	246	41.3
		596	100
Any postnatal clinic after delivery	Yes	296	49.7
	No	300	50.3
		596	100
Did the child have vaccination	Yes	196	32.9
	No	400	67.1
		596	100
Are you aware of treated mosquito nets	Yes	250	41.9
	No	346	58.1
		596	100

QUALITY OF CHILD HEALTH CARE
Practising of Child Health Care by Mothers

Most of the respondents 300 (50.3%) usually feed their children with carbohydrate whereas 200 (33.6%) respondents usually feed their children with balanced –diet and less number 50 (8.4%) and 46 (7.7%) usually feed their children with protein and vitamin food content.

A large proportion 380 (63.8%) of mothers indicated that cultural

activities influence the child's health while few respondents 216 (36.2%) did not agree that cultural activities influence the child's health.

Most of the respondents 350 (58.7%) were aware of exclusive breastfeeding but 246 (41.3%) of respondents did not know about exclusive breastfeeding.

Majority of mothers 300 (50.3%) did not attend postnatal clinic after delivery while 296 (49.7%) of mothers attended post natal clinic after delivery.

A significant number, 400 (67.1%) of respondents did not vaccinate their children while a few number 196 (32.9%) of the mothers vaccinated their children.

A large number, 346 (58.1%) of mothers were not aware of treated mosquitoes nets 250 (41.9%) were aware of treated mosquitoes nets.

Table 4.2.5 ENVIRONMENTAL SANITATION

VARIABLE	CLASS	FREQUENCY	PERCENT
Filthy environment	Yes	390	65.4
Makes plenty Mosquitoes	No	200	33.6
	No Response	6	1.0
		596	100
Most rural areas	Yes	350	58.7
Have poor sanitation	No	240	41.3
		596	100
Some urban areas	Yes	400	67.1
Enjoy clean environment	No	196	32.9
		596	100
The death of the child is closely associated with polluted and contaminated environment	Yes	400	67.1
	No	196	32.9
		596	100
The child practices personal hygiene	Yes	246	51.3
	No	350	58.7
		596	100
Do you keep clean environment inside and outside home	Yes	296	49.7
	No	300	50.3
		596	100

ENVIRONMENTAL SANITATION

Majority of the respondents 390 (65.4%) accepted that a filthy environment breeds plenty mosquitoes while 200 (33.6%) of the respondents did not agree and 6 (1.0%) respondents did not respond.

A significant number 350 (58.7%) indicated that most rural areas have

poor sanitation while 240 (41.3%) of respondents did not accept that most rural areas have poor sanitation.

Most of the respondents, 400 (67.1%) showed that some urban areas enjoy clean environment while a few number, 196 (32.9%) did not indicate that some urban areas enjoy clean environment.

A large number, 400 (67.1%) of respondents indicated that the death of a child is closely associated with polluted and contaminated environment while a few number, 196 (32.9%) respondents disagree that the death of a child was not closely associated with polluted and contaminated environment.

Most of the respondents 350 (58.7%) indicated that the children below five years never practiced personal hygiene while 246 (51.3%) respondents showed that children below five years practiced personal hygiene.

Majority of the respondents, 300 (50.3%) kept clean environment inside and outside the home while a few number, 296 (49.7%) did not keep a clean environment inside and outside the home.

4.3 HYPOTHESES TESTING

The main hypothesis which was developed and which presumed that determinants of mortality rate among under five children in Nasarawa State were not significantly associated with health problems was broken into the following sub hypotheses.

4.3.1 **Sub-hypothesis:** There is no significant association between the influence of environmental diseases on under-five mortality in Nasarawa State

4.3.2 **Sub-hypothesis:** There is no significant association between the influence of source of medical care on under-five mortality in Nasarawa State

4.3.3 **Sub-hypothesis:** There is no significant association between the influence of the socio-economic status of parents on under-five mortality in Nasarawa State

4.3.4 **Sub-hypothesis:** There is no significant association between the influence of illiteracy / low educational level of parents on under-five mortality in Nasarawa State

The hypotheses formulated above were tested using chi-square statistics to determine the significant independence of opinions between the variables and those of the respondents. All the hypotheses were tested at 0.05 statistical level of significance.

Environment diseases	Under -five mortality in Nasarawa state.			
	Yes	No	X ² cal	Df
Malaria	59	48	24.52	5
Diarrhea	48	46		
Anaemia	30	34		
Malnutrition	20	37		
Measles	12	14		
Other factor	38	9		

df 5 (0.05)= 11.075

An examination of table 4:3:1 reveals that the critical chi-square value for 5

degrees of freedom and 0.05 level for significance is 11.0705 with calculated value of 24.52 which exceeds the critical value. Hence we reject the null hypothesis which states that there is no significant association between the influence of environmental diseases on male and female under-five mortality. However ranking factors that influence under-five mortality and types of diseases shows malaria, diarrhea and anemia as major factors.

Source of medical care	Under -five mortality in Nasarawa state.			
	Yes	No	X ² cal	Df
Modern health facilities	114	94	2.46829	3
Chemist	2			
Traditional healer	1	1		
Religious healer	1			

$$df_3 (0.05) = 7.81473$$

This table examines the existence of association between the influence of source of medical care and under-five mortality. It shows that the calculated $X^2 = 2.46829$ and the critical or table value of $X^2 = 7.81473$.

Since the calculated value is less than the critical value, we do not reject the null hypothesis which states that there is no significant association between the influence of source of medical care on male and female under-five mortality. In other words health facilities are the most patronized while religious healers are less patronized.

Parents status	Under -five mortality in Nasarawa state.			
	Yes	No	X ² cal	Df
High –income (\$ 3 per day)	195	158	4.01578	2
Middle-income (\$ 2 per day)	5			
Low-income (\$1< per day)	8	6		

$$df_2 (0.05) = 5.99147$$

Table 4.3.3 shows the critical value of chi-square with 2 degrees of freedom at $\alpha=0.05$ is 5.99147 and calculated chi-square value of 4.01578. This implies that the null hypothesis which states that there is no significant association between the influence of socio-economic status of parents on under-five mortality can not be rejected because the critical value is higher than the calculated value. In other words males and females from different socio-economic backgrounds were differently affected.

Illiteracy/ low educational level of parents (female)	Under -five mortality in Nasarawa State.			
	Yes	No	X ² cal	Df
Less girl child education	20	5	57.14	5
Illiteracy	103	31		
Traditional Birth Attendant (TBA)	52	81		
Inexperienced mothers	47	16		
Ignorant women	44	15		
Absence of adequate health education services	40	14		

df 5 (0.05)= 11.0705

Examination of table 4.3.4 shows a 0.05 level of significance and 5 degrees of freedom with critical or table value of 11.070 and calculated chi-square value of 57.14. Hence the test statistics calculated value is greater than critical/table value. Therefore, the null hypothesis which states that there is no significant association between the influence of illiteracy/low educational level of parents on under-five mortality is rejected.

In other words the data available shows that those with low girl-child education have less problem of under-five mortality compared to those who are stark illiterates. Therefore we may conclude here that there is significant association between illiteracy and under-five mortality.

DISCUSSION

The result obtained from the analysis of environmental diseases and illiteracy of parents (females) in Nasarawa State and the test of the hypotheses for this study reveal that malaria, diarrhoea, anaemia, measles and illiterate parents (females) have a significant association with the influence of under-five mortality in Nasarawa State. This finding agrees with the findings of Park (2002) from his study of preventive disease in India. He reports that malaria is thought to kill between 1.1 and 2.7 million people world wide each year of which about 1 million are children under-five years of age (U5MR). Also this study is consistent with Ogunjuyigbe (2004) in his study of under-five mortality in Nigeria. The study, “perspectives and attitudes of the Yorubas towards the existence of Abiku” reports that the common causes of child mortality in Nigeria include malaria, diarrhoea, acute respiratory infections, measles, tetanus etc.

In addition, the findings of this study reveal that health facilities are the most patronized while religious healers are the least patronized by the respondents as sources of medical care for their children as a result of inadequate health facilities particularly in the rural areas. This study is consistent with the study of UNICEF (2000) which reveals that no child should be deprived of his or her right to health care service in order to reduce child mortality. Also this study tends to agree with Bassir (1973) who submits that medical practice has to do with life; curative and preventive medicine deals with the maintenance and preservation of life. It is unfortunate that our

hospitals are grossly under-staffed, laboratories and other modern technical services do not exist in the vast majority of hospitals in the rural areas and drugs are in short supply. At times surgery is performed in non-sterile conditions in rural areas and recovery is invariably complicated by environmental infection. It is against this background which is complicated by corruption that the poor masses have to face the problems of morbidity and mortality in our community.

Further more this study indicates that the socio-economic status of parents has no significant association with the determinants of mortality rate among under five children in Nasarawa State. The respondent's view points tend to agree with Park (2002) who submits that the availability and quality of health care as well as the nature of the child's environment are closely related to infant mortality. However, major improvements in health status and a decrease in infant mortality require continuing socio-economic development including the provision of health services.

In conclusion, from the analysis and test of hypotheses, the findings of this study reveal that illiteracy/ low educational level of parents have significant association with the determinants influencing under-five mortality in Nasarawa State. These findings agree with Ofili et al (2005)'s the study of the role of traditional birth attendants in maternal health care in Edo State. They report that illiteracy is the greatest barrier to any improvement in health conditions. The untrained mid-wife or traditional birth attendant (TBA) is greatly responsible for high under-five mortality. She is usually an illiterate

person devoid of all knowledge of rules of hygiene. Her unhygienic delivery practice is an important cause of high under-five mortality. Similarly this study is comparable to the study of Park (2002) who reports that the world map of illiteracy closely coincides with the map of poverty, malnutrition, ill health and child mortality. To some extent too, female education compensates for the effects of poverty on health irrespective of the availability of health facilities.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 SUMMARY

The study examines the determinants of mortality rate among under five children in Nasarawa State. The population used for the study consisted of parents (women) and health workers (females) randomly selected from three senatorial districts of Nasarawa State.

The questionnaire which was employed as instrument used to gather information for the study contained four sections: bio-data, factors influencing under-five mortality, quality of child healthcare, health facilities by parents and environmental sanitation. A total of 600 questionnaires were randomly administered to women and health workers (females) through trained research assistants at selected government general hospitals during pre-natal and post natal clinic in Nasarawa State but only 596 were retrieved.

The data collected was analyzed using descriptive statistics (frequencies and percentages) to assess the variables of the study and chi-square statistics were used to test the hypothesis at 0.05 level of significance.

The findings of this study include the following:

1. Malaria, diarrhoea, anaemia, and illiteracy of the parents (mothers) were the major determinants influencing under-five mortality in Nasarawa State.
2. The symptoms of childhood diseases such as malaria, diarrhoea, anaemia, etc. which were observed/viewed by health workers to be the

determinants of mortality rate among under five children in Nasarawa State were confirmed with the opinion of parents through statistical test of null-hypothesis which was rejected.

3. The socio-economic status of parents and source of medical care of children were not significantly associated with factors influencing under-five mortality in Nasarawa State. This could be as a result of the fact that modern health facilities are the most patronized while religious healers are least patronized by the respondents as sources of medical care for their children.

4. According to the descriptive statistics (frequencies and percentages) the findings confirmed that most parents were unable and inadequately receive antenatal/postnatal care as a result of high medical fees, distance to health centers and inadequate health facilities etc.

5. Similarly the findings revealed that there was no effective practice of child health care by mothers.

5.2 CONCLUSION

The environmental diseases such as malaria, diarrhoea, anaemia, and illiterate people were the serious health problems that influenced under-five mortality in Nasarawa State. The poor standard of living of the people exposes the children to health hazards in Nasarawa State.

5.3a **RECOMMENDATIONS**

This study was guided by the research questions and hypotheses on the basis of which the following recommendations are made:

1. It is essential to introduce health education to women in prenatal and postnatal clinics in Nasarawa State in order to instill the habit of personal hygiene in mothers and children as well as to improve environmental health and increase quality life in the family.
2. Mothers and children in Nasarawa State should have more access to free health facilities and health services.
3. Health educators and health researchers should continue to raise awareness of preventive measures such as environmental sanitation, immunization, health care of the child, general welfare of the child, good nutrition and other interventions for mothers and children below five years of age in both rural and urban areas in Nasarawa State.
4. Finally the government and all the communities in Nasarawa State should intensify efforts to promote the health of its citizens and especially mothers who will deliver healthy children with good behaviour and long live expectancy.

5.3(b) **RECOMMENDATION FOR FURTHER RESEARCH/ STUDY**

Any research on this area of study using different age groups, methods, procedures and related work to expand knowledge within the field of the study is permissible.

REFERENCES

- Adebayo E.T., and M. Dairo (2005) "Patients' compliance with instructions after oral surgery in Nigeria". Journal of Community Medicine and Primary Health Care Vol. 17, No 1, PP. 38.
- Adesuyi S.L (1973) Priorities in National Health Planning. Proceedings of an international symposium, Caxton Press (West Africa) Limited Ibadan.
- Adetokumbo O. L. and Herbert M. G. (2003) Short Textbook of Public Health medicine for the tropics. Fourth edition Arnold 338 Edmonton road London NW1 3BH.
- Agu A. P. and Nwojiji J. O. (2005) "Childhood malaria: mothers perception and treatment seeking behaviour in a community in Ebonyi state South East Nigeria". Journal of Community Medicine and Primary Health Care. Vol. 17, No1, PP. 45 – 46
- Amaesh M. S (2002) National Reproductive Health Strategic, Framework and Plan 2002 – 2006, Federal Ministry of Health Abuja June 2002.
- Augustus K. K. (2005) Demographic research; volume 12, Article 12, www.demographicresearch.org. Research article, Maxplan ckGasell shaft 20 may 2005
- Asekun – Olarinmoye E.O, etal (2005) Health Status of Children Aged two years cared for in day-care centres and the home Environment in Ibadan". Journal of Community Medicine and Primary Health Care, Vol. 17, No1, pp.33.
- Bast k. S. and K. F. (1990) "Vaccine preventable diseases and immunization in the developing countries" paediatric clinic of North America.
- Basic support for institutionalising child survival / Nigeria (Basic II / Nigeria) (2003) Report of the Integrated Child Health Cluster Survey (ICHCS) March 2003.
- Basics II / Nigeria (2002) Integrated Child Health Survey (ICHS) Nigeria 2002 Survey Report, Abuja Nigeria.
- Basics II and United States Agency for International Development (USAID/Nigeria) (2001) Performance Indicators and Targets.
- Bassir O. (1973) "Priorities in National Health Planning", proceedings of an International Symposium, Caxton Press (West Africa) Limited Ibadan.

- Benue State (2004) Health Profile: Diseases Surveillance, Department of Health Planning, National Health Management Information System Unit, Ministry of Health Makurdi, Nigeria.
- Darmstadt G. I., J. E. Lawn et al (2003) “Advancing the state of the world’s new born”. Bulletin of the World Health Organization 81(3) 223-225.
- ECA (1994) f
- “Family Planning targets in relation to fertility reduction and reproductive health care in ECA member states” December 1994, Addis-Ababa United Nations Economic Commission for Africa.
- Economic Commission for Africa (ECA, 1994) “Economic report on Africa 1994. Family planning targets in relation to fertility reduction and reproductive health care in ECA member states” December 1994 Addis Ababa.
- FGN (1978) National child health policy declaration report in Nigeria.
- FGN (2004) National population census (NPC) 2004 survey mortality rate.
- Frank R., Pelcastre B, et al (2004) “Low birth weight in Mexico: New evidence from a multi-site postpartum hospital survey”. *Salud publica Mex.* 2004.
- Grant, James P. (2000) “Initiative to Reduce Preventable Child Deaths”
- Huttly S. A. R., Deborah Blum and et al (1987) “The Epidemiology of acute diarrhea diseases in a rural community in Imo state of Nigeria”. *Transaction of the royal Society of Tropical Medicine and Hygiene.*
- Integrated Child Health Cluster Survey (ICHCS) (2002) Complementary Feeding Programme..
- Johannesburg (2004) Coverage and Awareness of vitamins and minerals deficiency programm. Regions development prospects.
- Mary Bronson Merki and Don Merki (1994) Glencoe Health. A Guide to Wellness. 4th edition MC Grawhill New York Columbus Ohio
- MCC or Mick Mare (1985) “The contribution of low birth weight to infant mortality and childhood mortality”, New England. Journal of Medicine.
- Molineaux, Louis and G. Gramiccia (1980) “The Garki Project: Research on the Epidemiology and Control of Malaria in Sudan Savannah of West Africa “Geneva WHO.

- Mary land issues for 1990: child survival programmes. Johns Hopkins University School of Hygiene and Public Health Institute for International Programmes.
- Morgan and Krejcie (1970) Determination of Sample Size for Research Activity.
- Ngalikpima, V. P. (1983) "Review of Respiratory infections in a developing country". European Journal of Respiratory Diseases.
- Nigeria Demographic and Health Survey (NDSH) (1970) and Federal Office of Statistics (FOS 1992).
- Nigerian's Fertility Survey (1981 – 82) World Demographic Record, Federal Government of Nigeria.
- National Child Health Policy 1978 Declaration: Children are Promise and Future of Every Nation.
- Nasarawa State (2005) Health Profile: Diseases Surveillance, Department of Health Planning, National Health Management, Information System Unit, Ministry of Health Lafia
- Ofilo A. N. and O. H. Okojie (2005) "Assessment of the role of traditional birth attendants in maternal health care in Oredo Local Government Area, Edo State, Nigeria" Journal of Community Medicine and Primary Health Care. Vol.17 No1 pp.55
- Oguguo M.B. Igwe and Patrick O. Emeharole (1993) Fundamentals of Health Science for SSS Bookone Pacific Publishers, unelowulu-Obosi Anambra State, Nigeria.
- Ogunjuyigbe Peter O. (2004) "Under-five mortality in Nigeria: perspectives and attitudes of the Yorubas towards the existence of Abiku" Research article Max-Planck-Gesell Schaft.
- Oyediran, A. B. O, Dr. T. M. Kolawole and Dr. Akande E. O. (1973) "The provision of Health manpower for Nigeria: priorities in National Health planning", Proceedings of an international symposium.
- Park (1997) Park's Textbook of Preventive and Social Medicine. Vol.1.
- Park (2002) Park's Textbook of preventive and social medicines 17th Edition M/S Babarsides BHANOT publishers 1167, Prem Nagae Jabalpur India.

- Uti, O. G, Savage, K. O. and etal (2005) “Maternal beliefs about infant teething”. Journal of Community Medicine and Primary Health Care. Volume 17 No.1
- Richard J. Wagman, M.D (1997) The Medical and Health Encyclopedia Ferguson Publishing company Chicago-Illinois.
- Roscoe (1969) Behaviour statistics that 500 respondents is a standard sample size of any population.
- Shapiro, S. M. C. et al (1980) “Relevance of correlates of infants’ deaths for significant morbidity at one year age”. America Journal of Medicine.
- Sofoluwe G. O. et al (1996) Principles and Practice of Public Health in Africa. Volume 1.
- Serah Castle, P. Stanley Yoder and et al (2001). Introducing Complementary Foods to Infants in Central Mali. Calverton Maryland USA October 2001.
- United Nation International Children Emergency Fund (UNICEF) 1996. Definition of under-five mortality rate (U5MR).
- UNICEF (2000) Nigeria and the Convention on the Rights of the Child. A Workbook for Nigerian Junior Secondary School Students. UNICEF (2005) Country Office Lagos.
- UNICEF (2001) Low Birth Weight and Malnutrition.
- UNICEF report of 1987. Infant and Child Mortality in Developing Countries.
- United States Agency International Development/Nigeria USAID/ Nigeria (2001) Maternal Neonatal Health. Interventions for Improving New Born Health and Survival, Abuja.
- Veneman Ann .M. Executive Director of UNICEF. (UNICEF Report (2005) New global partnership calls for immediate action to help women and children survive New York 12th September.
- World Health Organization (WHO 1984) “A programme for the control of acute respiratory infections in children” Memorandum from a WHO meeting Bulletin of WHO, Abuja.
- WHO (1998), “Protecting, promoting and supporting breastfeeding. The special role of maternity services”. A joint WHO/UNICEF statement WHO Geneva.

WHO report of 2001 malnutrition, Abuja-Nigeria.

WHO Bulletin report 2002, Abuja - Nigeria.

World Health Summit for Children (1990) Solution to Death of Child from Malnutrition, New York USA September.

WHO Report 2004 Sexual and Reproductive Health (SHR) Conference World Health Organization Office Abuja Nigeria.

WHO 2005 prevent and treat malaria during pregnancy, Abuja-Nigeria.

Yakubu Gorah Kajang and Audu Andrew Jatau (2003) Education for Health for Living and National Development Matchers Publishing Ltd. Jos Plateau State, Nigeria.

APPENDIX A

AHMADU BELLO UNIVERSITY, ZARIA-NIGERIA

DEPARTMENT OF PHYSICAL AND HEALTH EDUCATION (OFFICE OF THE
HEAD OF DEPARTMENT)

Vice Chancellor: Professor Shehu U. Abdullahi

Head of Department: Dr. A. I. Kabido

Date.....

Our Ref _____

Our Ref _____

Dear Sir/Madam

REQUEST TO VET A QUESTIONNAIRE

Mr Audi Musa Alan, is a Post-graduate student of Health Education in the above department.

In partial fulfilment of the requirements of his Master degree programme in Health Education, he is conducting research on the: determinants of mortality rate among under five children in Nasarawa State

Based on your experience and professional expertise, you have been chosen to critically examine the questionnaire and make necessary inputs for its improvement.

Here I wish to attach the questionnaire and hypothesis of the study for your critical appraisal and corrections at your earliest time, so that he can finalize the instrument for further necessary action.

Thanks

Yours faithfully,

Signed

Prof. M. A. Chado

Major Supervisor

APPENDIX B

PHYSICAL AND HEALTH EDUCATION DEPARTMENT
FACULTY OF EDUCATION
AHMADU BELLO UNIVERSITY, ZARIA
QUESTIONNAIRE

INTRODUCTION AND INFORMED CONSENT

I, Audi Musa Alan a student from the above department wishes to conduct research in your domain. The questionnaire is designed by the researcher to conduct investigation on the determinants of mortality rate among under five children in Nasarawa State. The research work will be used for developing intervention to promote child survival.

I would very much appreciate your co-operation and participation, please carefully read these statements and tick (✓) or fill in the appropriate column according to how best each of them actually represents your situation. Whatever information you provide will be kept strictly confidential.

SECTION “A”

PERSONAL DATA OF INFORMANT

1. Age: 15-12 [] 21-30 [] 31-40 [] 41-above []
2. Sex: (a) Male [] (b) Female []
3. Religion: (a) Islam [] (b) Christianity []
(c) Other (specify).....
4. Marital status (a) Married [] (b) Single [] (c) Separated []
(d) Divorced []
5. Educational qualification (a) Adult literacy [] (b) Quranic school []
(c) Primary education [] (d) Secondary education []
(e) Post secondary education
(f) Others (specify).....
6. Occupation (a) House wife/farming [] (b) Petty business []
(c) Health workers [] (d) Civil servant []
(e) Others (specify).....

7. Residential location (a) Urban [] (b) Rural []
8. Socio-economic status
 - (a) Earns more than three dollars (\$3) per day (high-income) []
 - (b) Earns two dollars (\$2) per day (middle-income) []
 - (c) Earns less than one dollar (<\$1) per day (low-income) []

SECTION "B"

FACTORS INFLUENCING UNDER FIVE MORTALITY IN NASARAWA STATE

9. Environmental diseases
 - (a) Malaria is the highest cause of under-five mortality in Nasarawa state. Yes [] No []
 - (b) Diarrhea (Gastro-enteritis) contribute to the under-five mortality in Nasarawa state Yes [] No []
 - (c) Aneamia can influence under-five mortality in Nasarawa state Yes [] No []
 - (d) Malnutrition exert great relation with under-five mortality in Nasarawa state Yes [] No []
 - (e) Do Measles has strong relation with under-five mortality in Nasarawa state Yes [] No []
 - (f) Other diseases/sickness play most influence on the under-five mortality in Nasarawa state Yes [] No []
10. Source of child medical care
 - (a) Traditional healers increases the under-five mortality in Nasarawa state Yes [] No []
 - (b) The health facilities assist to reduce under-five mortality in Nasarawa state Yes [] No []
 - (c) Do Chemist's drug help to reduce under-five mortality in Nasarawa state Yes [] No []
 - (d) Could religious healers reduce the under-five mortality in Nasarawa state Yes [] No []

11. Socio-economic status of parents
- (a) The female parents below poverty level who earns less than the equivalent of one United States Dollar per day in Nigeria have increased under-five mortality in Nasarawa state Yes [] No []
 - (b) The middle income class women who earn one dollars per day in Nigeria have strong desire to reduce under-five mortality in Nasarawa state Yes [] No []
 - (c) The high socio – economic status women of Nasarawa state have no health education knowledge to prevent under-five mortality in Nasarawa state Yes [] No []
12. Illiteracy/ Low educational level of parents (women)
- (a) Illiteracy/Low educational level of parents women in Nasarawa state increases the under-five mortality in Nasarawa state Yes [] No []
 - (b) The traditional birth attendant who devoid of all knowledge of rules of hygiene is greatly responsible for the high infant /child mortality. Yes [] No []
 - (c) Less girl child education is closely related to child health care problem and under-five mortality in Nasarawa state Yes [] No []
 - (d) An inexperienced mothers who can not provide child health services increase under-five mortality in Nasarawa state Yes [] No []
 - (e) An ignorant woman who caused absence of balanced- nutrition to herself especially during pregnancy, lactating can increase under-five mortality in Nasarawa state Yes [] No []
 - (f) The absence of adequate knowledge of health education and health practice by women in Nasarawa state has increased under-five mortality in Nasarawa state Yes [] No []

FOR HEALTH WORKERS ONLY IN THE HEALTH INSTITUTION

- 13. Have you lost any child under five years between 2005/2006 at hospital base Yes [] No []
- 14. Tick the suspected factors that influences the child's death
(a) Diarrhoea [] (b) Malnutrition [] (c) Pneumonia [] (d) Malaria []
(e) Anaemia [] (f) Measles [] (g) Others (specify).....
- 15. Tick the sign (s) of illness diagnosed for the death of the child
(a) Repeated watery stool and vomiting [] (b) Fever/high temperature []
(c) Difficult breathing [] (d) Not eating/ drinking well []
(e) Other (specify).....
- 16. Did vaccine reduce factors that influence the under five mortality? Yes [] No []

HEALTH FACILITIES BY THE PARENTS

- 17. Where did you seek for medical care? (a) Traditional healer []
(b) Religious healer [] (c) Health facilities [] (d) Chemist []
- 18. The availability of Health facilities in your area is
(a) Adequate [] (b) Inadequate []
- 19. Medical fees in your place is (a) Very high [] (b) High [] (c) Moderate []
- 20. The distance from your place to maternity centre is more than 2km. Yes [] No []
- 21. Do you adequately receive antenatal care service- Yes [] No []

QUALITY OF CHILD HEALTH CARE

- 22. Do you know about exclusive breastfeeding. Yes [] No []
- 23. Did the child have vaccination. Yes [] No []
- 24. Are you aware of treated mosquito net? Yes [] No []
- 25. On what do you usually feed the child (a) Carbohydrate []
(b) Protein [] (c) Balanced-diet [] (d) Vitamin []
- 26. Did you attend postnatal clinic after delivering. Yes [] No []

- 27. Did the child have regular medical check-up. Yes [] No []
- 28. Did you seek prompt medical attention for the sick child. Yes [] No []
- 29. Did some cultural activities influence the Health care of the child.
Yes [] No []
- 30. Briefly state the health care system practiced by your community

ENVIRONMENTAL SANITATION

- 31. Filthy (dirty) environment makes mosquitoes to be plenty in the environment Yes [] No []
- 32. Many rural areas have poor sanitation environment Yes [] No []
- 33. Some urban areas clean environment. Yes [] No []
- 35. Did the child practice personal hygiene Yes [] No []
- 36. Did you always keep a clean environment inside and outside home Yes [] No []
- 37. Please give useful suggestion here on how to prevent or control determinants of mortality rate among under five children in Nasarawa state.
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