

CHAPTER ONE

INTRODUCTION

1.0 Background

Nigeria is one of the five countries accounting for half of under-five child mortality globally (UNICEF, 2016a). India, Pakistan, Democratic Republic of Congo and Ethiopia, are the other four countries with high under-five mortality. Although some progress has been made in reducing under-five child mortality in Nigeria, it has been slow. In 2016, United Nations Children's Fund (UNICEF) reported that 750,000 children under-five died in Nigeria in 2015.

Globally, over 200 million children who survive the first five years do not reach their potential in cognitive development because of poverty, poor health, malnutrition, and deficient care (Grantham-McGregor *et al.*, 2007). The consequences of malnutrition is an estimated 20 per cent loss in adult productivity, growth retardation, reduced physical activity, lowered resistance to infection, impaired intellectual development and cognitive abilities. This results in a poor start for the next generation of children (WHO, 2012). Furthermore, malnutrition is both a cause and consequence of poverty (Goel *et al.*, 2007), thus creating a vicious cycle that predispose children to infections and death (Odunbanjo *et al.*, 2009).

In Nigeria, the prevalence of malnutrition is high among under-five children, with children in the rural areas being more in number than those in the urban area (FMOH 2007; NPC and ICF Macro, 2014). Malnutrition in under-five children manifests as Protein-Energy Malnutrition (PEM), and Micro-nutrient deficiencies which are also known as hidden hunger (Ubesie *et al.*, 2012). The prevalence of malnutrition increases with the child's age; starting with wasting, underweight and peaking with stunting which affects almost half of children (Osinusi 2010; NPC and ICF Macro, 2014).

In 2003 the Bellagio Study Group on Child Survival highlighted the need for strong health systems as one of the requirement for ensuring child survival in developing countries. In Nigeria the closest health system to the community is the Primary Health Care (PHC), and is designed to be within five kilometres radius providing minimum, essential health care to people at the community, at affordable cost, with the community's full participation, ownership and collaboration (FMOH, 2007). The Nigerian health policy requires that a comprehensive health care system is delivered through the primary health centres and should include maternal and child health care (FMOH, 2007).

In 1978, an international conference on PHC was held in Alma Ata with 134 countries in attendance. The primary goal of the conference was to ensure health for all. In achieving this goal, the following principles were enacted: reducing exclusion and social disparities in health, organising health services around people's needs and expectations, integrating health into all sectors, pursuing collaborative models of policy dialogue and increasing stakeholder participation in PHC system (WHO, 2008). In Nigeria the PHC system showed improvement in immunisation programmes, diarrhoea reduction in children, increased malaria treatment, reduction in acute respiratory infections and improved safe motherhood outcomes. However the health gains of the PHC system between 1980 and 1985 was eroded by the economic crisis that followed the adoption of the Structural Adjustment Programme (SAP) in 1986. The structural adjustment programme resulted in reduction of government's funding to the health care sector. This engendered brain drain of skilled health professionals, reversal of the gains in maternal and child health, weak health facilities and systems, frequent strike actions and corruption (Ehiri *et al.*, 2005). In addition the Local Government, which is the third tier of government responsible for PHC was not performing its responsibilities in managing and allocating adequate resources to the PHC (FMOH, 2007). It has been suggested that the deficits in the PHC led to the Private health sector becoming dominant, vibrant and expensive (Ogunbekun *et al.*, 1999).

This gap in the Nigerian PHC system was reiterated by Rohde *et al.*, (2008) in a review of PHC systems in 30 developing countries. This review showed the compelling need for (i) nationally-agreed package of prioritised and phased primary health care that all stakeholders are committed to implementing, (ii) need for attention to be paid to district

health management systems, and (iii) consistent investment in primary health-care extension workers who are linked to the health system. The Nigerian Federal Ministry of Health initiated the Integrated Maternal and Neonatal Child strategy (IMNCH) in 2007 (FMOH, 2008). IMNCH is part of efforts at tackling the high child morbidity and mortality, and also creating linkages between the primary health care with the communities. The IMNCH strategy seeks to address gaps in healthcare service delivery, making Nigeria one of the first countries in Africa to plan along an integrated continuum of care (FMOH, 2011). The strategy identifies that healthcare can be delivered through three service modes; (i) family cum community based service, (ii) population oriented and (iii) clinical based individual services, emphasising the need for service delivery to be cost effective and impactful (NPHCDA, 2010).

The family and community-based service approach employs three modes of delivery; (i) family preventive/Water, Sanitation and Hygiene (WASH) services, (ii) family neonatal care, infant and child feeding, and (iii) community management of illness (FMOH, 2011). The family and community-based service approach mode of delivery presents opportunity for people within the households and communities to participate in decisions about their health and also to contribute towards the resources necessary for the provision of health care in the household and community (NPHCDA, 2010), which is consistent with the principles upon which the PHC was founded (Cueto, 2004).

Parental education, especially of mothers, is related to child survival, health, nutrition, care, cognition, and education (Hatt *et al.*, 2006). Maternal education has been shown to have a consistent effect on child health and care, operating through a number of key determinants which interact with other underlying factors which include adequate access to food, care and health services as noted in the conceptual frame work for Malnutrition and Death (UNICEF, 1998). Also other studies show mother's educational levels as having strong correlation with child survival (Engle, 1992; Maxwell, 2000; Wagstaff *et al.*, 2004). Therefore the challenges to child survival no longer lie only in determining the proximate causes of child malnutrition but in the processes required at ensuring that the services, information and education necessary for improved child survival reach the most marginalised communities and poor households (UNICEF 2008; Bryce *et al.*, 2013).

Furthermore reviews of programmes focusing on child survival have shown that an integrated approach linking health facilities and communities rather than vertical programmes are more effective in tackling child morbidity and mortality (Chopra *et al.*,2012).

1.1 Statement of Problem

Nigeria contributes more than 10 percent of the ten million under-five child mortality mostly from preventable and treatable diseases globally (USAID 2009; WHO 2012).WHO in 2015, reported that about 700, 000 children died before their fifth birthday in Nigeria in 2010; 60 percent of these deaths were due to the following conditions: malaria (20%), pneumonia (17%), prematurity (12%) and diarrhoea (11%).

Malnutrition has been associated with 60% of these deaths among under-five children in developing countries (Pelletier *et al.*,1995; Black *et al.*,2003;Wagstaff *et al.*,2004;Caulfield *et al.*,2004;and Faruque *et al.*, 2008).The Nigeria Demographic Health Survey shows the nutritional status of under-five children as poor; 37% being stunted, 18% wasted and 29% underweight (NPC and ICF Macro, 2014).Shrimpton *et al.*,(2001), UNICEF (2008) and Atinmo *et al.*, (2009) reported that the negative consequences of nutritional deprivation in these early years of a child and especially in the first two years are partially irreversible, confirming earlier report by Engle (1992).

The practice of child survival interventions by mothers in Nigeria is still very low (Sanusi and Gbadamosi, 2009; Oche *et al.*, 2011), despite the availability and effectiveness of these interventions in reducing child morbidity and mortality. Exclusive breastfeeding is one of such effective intervention. Exclusive breastfeeding rates were 1%, 17%, 13% and 17% in 1990, 2003, 2008 and 2015 respectively (NPC and ICF Macro 1990, 2004, 2009; UNICEF 2016). Similarly, complete immunisation rates were 13%, 23%, and 25% for years 2003, 2008, 2013 respectively (NPC and ICF Macro 2004,2009 and 2014). Although the percentage of children with complete immunisation in 2003 almost doubled in 2013, the progress has been slow and fell short of set national target. In the rural areas, no progress has been recorded in a decade in childhood immunisation, as only 16% of rural children did receive complete immunisation (NPC and ICF Macro, 2014).

Mothers' low practice of child survival interventions have been associated with the following factors: lack of information on child survival interventions, low level of mothers' education, myths & misconceptions surrounding the practice of these interventions, and lack of support and encouragement from health service providers (UNICEF 2001, NPC and ICF Macro, 2009). Many child survival strategies have been adopted to reduce child morbidity, mortality and deliver these child survival interventions to mothers and their children. Some of these child survival strategies include: (i) (GOBIFF) Growth monitoring and promotion, oral rehydration therapy, breastfeeding, immunisation, food fortification, female education and family planning (ii) Baby Friendly Hospital Initiative (iii) Integrated Management of Childhood Illness (IMCI) (iv) Essential Nutrition Actions and (v) Roll Back Malaria (RBM). However, under-five mortality rate remains consistently high despite the introduction and implementation of these strategies (Magnani *et al.*, 1996; Bassett, 2008).

If these child survival interventions have been proven to work elsewhere, why are they not effective in Nigeria? Is this the result of poor uptake of these interventions or lack of knowledge of these interventions by mothers? These and other related questions, with reference to under-five children in rural households, form the rationale for this study.

1.2 Justification

Black *et al.*, (2003) outlined a series of child survival interventions which have been scientifically proven to reduce child mortality; oral rehydration therapy, breastfeeding, use of insecticide treated nets, Vitamin A supplementation, and community-based antibiotic treatment for pneumonia. In addition, the Lancet 2003 series on child survival showed that breastfeeding and oral rehydration therapy alone could prevent 13% and 15% of all under five deaths, respectively. Jones *et al.*, (2003), following a review of series of child survival interventions globally showed that the interventions necessary to reduce child mortality were available but that they were not being delivered to the mothers and children who needed them most. The ten year review of the 2003 Lancet series on child survival in 2013 showed that effective interventions were still not reaching large numbers of mothers and children (Bryce *et al.*, 2013).

In addition, a 2013 report; Countdown to 2015 for Maternal, Newborn and Child Survival showed that of the 75 countries that account for more than 95% of child deaths, none is yet to achieve close to full population coverage for a minimum set of essential interventions (Requejo *et al.*, 2013). Gareth *et al.*, (2003) noted that some of the most promising interventions may be delivered at the household with limited need for external material inputs which include promotion of exclusive breastfeeding, oral rehydration therapy, education on complementary feeding, and the use of insecticide treated nets.

Bhandari *et al.*, (2003) conducted a study in rural communities in India assessing the feasibility, effectiveness and safety of an educational intervention to promote exclusive breastfeeding. The results from the study showed that the educational intervention through the use of peer counsellors improved the rates of exclusive breastfeeding in the study communities. Similarly, Kumer *et al.*, (2008) in a study on reducing neonatal mortality, utilised trained community health workers in delivering messages to mothers on newborn caring practices, and provided support through home visit. Findings from the study showed a 54% reduction in neonatal mortality in the intervention communities as compared with the controlled communities. These studies confirm earlier works in which community members were used as child survival intervention educators in improving mothers' use of interventions (Morrow *et al.*, 1999; Haider *et al.*, 2000).

In Nigeria there is limited documented literature exploring the benefits of delivering cost-effective child survival interventions to mothers in rural communities. It is against this backdrop that this study is designed to use peer education in bridging the existing gaps between well intended child survival interventions, and mothers' practice of these interventions. It is anticipated that the study will complement the on-going studies in child survival, with particular reference to rural population and contribute to the reduction of malnutrition rates among under-five children.

1.3 Research Questions

1. What are mothers' knowledge and practice of child survival interventions in the selected communities?

2. How involved are fathers' in mothers' use of child survival interventions in the households?
3. Will peer education have any effect on the household use of child survival intervention by mothers of children 0-36 months in the selected households?
4. What will be the impact of the use of child survival interventions on nutritional outcomes of children 0-36 months in selected households?

1.4 General Objective

The general objective of this study was to evaluate the effects of peer education on the practice of child survival interventions among mothers of under-five children in selected rural households in Ibadan, Nigeria.

1.4.1 Specific Objectives

1. To assess mother's knowledge and practice of child survival intervention in the selected communities
2. To determine the level of fathers' involvement in mothers' use of child survival interventions in the households
3. To determine the effect of peer education on the use of child survival interventions by mothers of children 0-36 months in selected households
4. To evaluate the use of child survival interventions on the nutritional outcomes of children 0-36 months in selected households

CHAPTER TWO LITERATURE REVIEW

2.0 Introduction

This chapter presents some conceptual frameworks in child survival and malnutrition. These frameworks lay the necessary foundation for the Literature review. The chapter aims to highlight the current knowledge, nevertheless comparing current knowledge with knowledge gaps in reference to the research objectives as outlined in chapter One. It explores studies in child malnutrition, infant and young child feeding, child morbidity and mortality, child survival interventions and strategies, the state of Nigeria's primary health care service delivery and the national Midwives Service Scheme health programme targeted at reducing child morbidity and mortality. It also reviews relevant and empirical studies on the effectiveness of supportive interventions for mothers with under-five children, and discusses the sometimes conflicting conclusions from some of the literature.

2.1 Conceptual frameworks for the study of child survival

An analytical framework for the study of child survival determinants in developing countries was proposed by Mosley and Chen (1984). They argued that socio-economic and cultural variables must operate through a limited set of proximate determinants that directly influence the risk of diseases and the outcome of disease processes. These determinants were categorised into five groups; maternal factors, environmental contaminations, nutrient deficiency, injury and personal illness. The authors broke down these five categories of proximate determinants into 14 groups of specific factors: maternal factors; (age, parity, birth interval), environmental contaminations; (air, food/water/fingers, skin/soil/inanimate objects, insect vectors), nutrient deficiency; (calories, protein, micronutrients), injury ; (accident, intentional) and personal illness (personal preventive measures, medical treatment). Figure 2.1 shows the relationship and interactions that exist between the determinants and presents the resultant effects on the child. Mosley and Chen associated the presence of growth faltering in the child as a

manifestation of malnutrition, and sought to find a relationship between growth faltering and mortality. They found increased mortality occurring in children with lower weight for age (a measure of growth faltering). Hence they stated that both child mortality and child growth were affected by the same set of underlying nutritional and infectious conditions highlighted by the five determinant groups. In addition, they concluded that weight-for-age anthropometric index which measures underweight in children can also be regarded as a measure of health status rather than being solely for nutritional status (Mosley and Chen, 1984).

A review of the Mosley and Chen's analytical framework by Hill (2003), noted the uniqueness of the framework in combining researches in the social and medical sciences, and in identifying a single variable that measured both child morbidity and mortality. Weight for age, has become a composite indicator for measuring under nutrition because of its ability to capture both stunting; which is generally associated with chronic under nutrition and wasting; manifestation of recent and acute under nutrition (Caulfield *et al.*, 2004). However, Mosley and Chen's framework did not explain the root causes of malnutrition but identified some key factors that could predispose the child to malnutrition, morbidity and mortality. In addition, though the framework showed the relationship between infection and growth faltering which leads to malnutrition, it did not provide a holistic and robust picture of the diverse causes of malnutrition which could be applicable in different settings. Overall, Mosley and Chen framework laid the precedence for the conceptualisation of the framework for malnutrition and death by UNICEF in 1990.

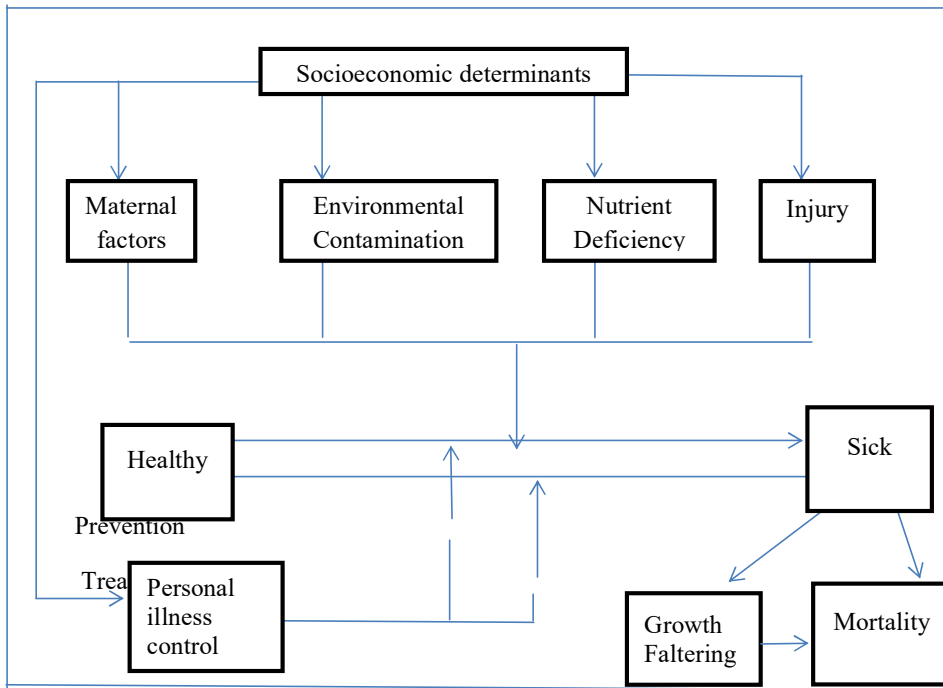


Figure 2.1. Operations of the five groups of proximate determinants on the health dynamics of a population. Source- Mosley and Chen 1984

The UNICEF framework elucidates the causes of malnutrition and death in Children and was developed as part of the UNICEF's nutrition strategy in 1989. The framework provides a guide in the analysis of the causes of malnutrition in any given context, provides explicit and unified perspective on the nature and causes of malnutrition in order to bring greater coherence and rationality to the effort to alleviate malnutrition in developing countries. The UNICEF conceptual framework serves as a guide to further explain and show causality of malnutrition in assessing and analysing the causes of the nutrition problem and helps in identifying the most appropriate mixture of actions to tackle malnutrition at the national, community and household levels (UNICEF, 1998).

The UNICEF framework identifies three broad causes of malnutrition; (i) the immediate causes are inadequate dietary intake and infectious disease; (ii) the underlying causes are household food insecurity, inadequate maternal and child care and inadequate health services and unhealthy environment; (iii) the basic causes include formal and non-formal institutions, political and ideological superstructure, economic structure and potential resources. Although more refined versions of this framework have since been developed, (e.g., adding female education or inadequate education just below the underlying causes and distinguishing human, economic and organisational resources- as depicted Figure 2.3), all the frameworks commonly contain the basic elements as shown in Figure 2.2.

In a review of the contribution of the UNICEF conceptual framework to the understanding of malnutrition, Pelletier (2002) emphasised that the analysis of the basic causes should begin at the household/community levels in relation to the relevant causes in a given setting and should proceed only to higher levels when the necessary resources cannot be mobilised at these lower levels. Pelletier stated that the perception that the causes of malnutrition were more highlighted at the immediate and underlying causes was a wrong way of understanding the conceptual framework. Furthermore, Leshem and Trafford (2007), highlighted that the importance of conceptual framework is hinged on its use in translating theories to practice which can be investigated through research rather than been allowed to linger in the abstract realm alone. In addition, frameworks should provide the basis for which research problems can be understood, fill knowledge gaps, and contribute to the body of knowledge (Leshem and Trafford, 2007). Mosley and Chen 1984 analytical

framework, and the UNICEF 1990 frameworks will be the bedrock on which this study will be guided. This study looks beyond the immediate causes of malnutrition among children and seeks to explore the potentiality of maternal contribution to child survival as one of the basic factors in reducing malnutrition and death among children in rural households.

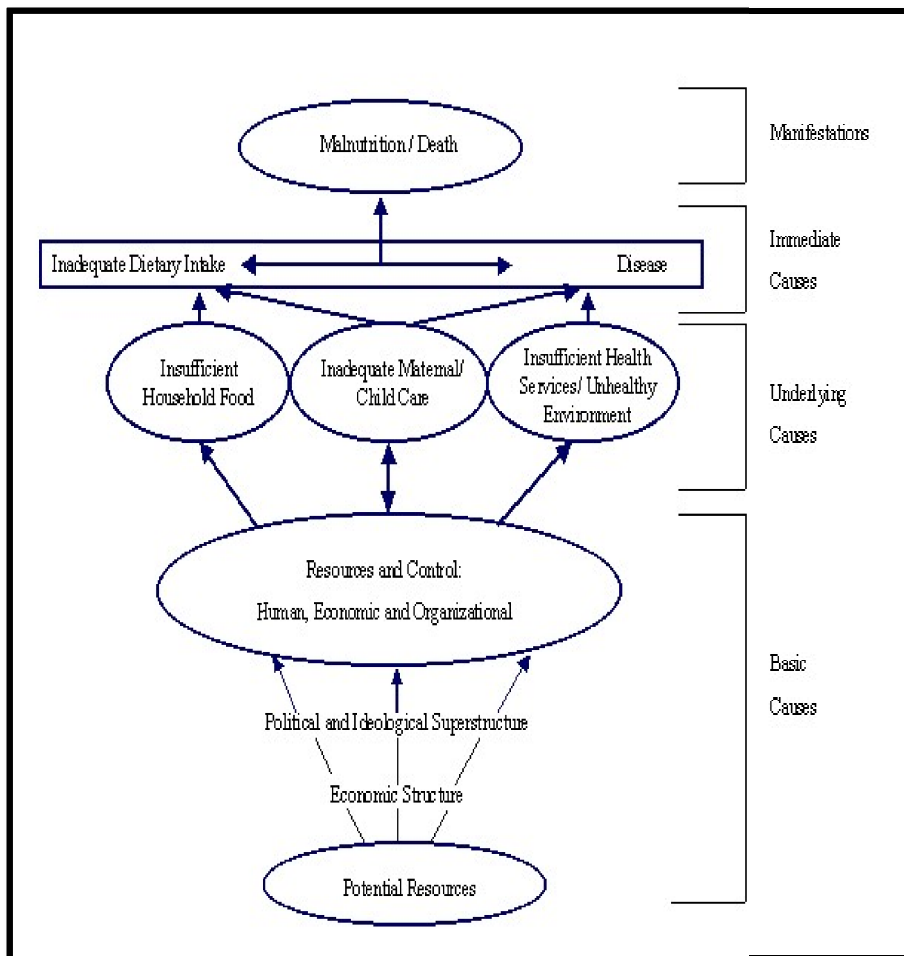


Figure 2.2 Conceptual framework for malnutrition and death. Source: UNICEF, 1990a

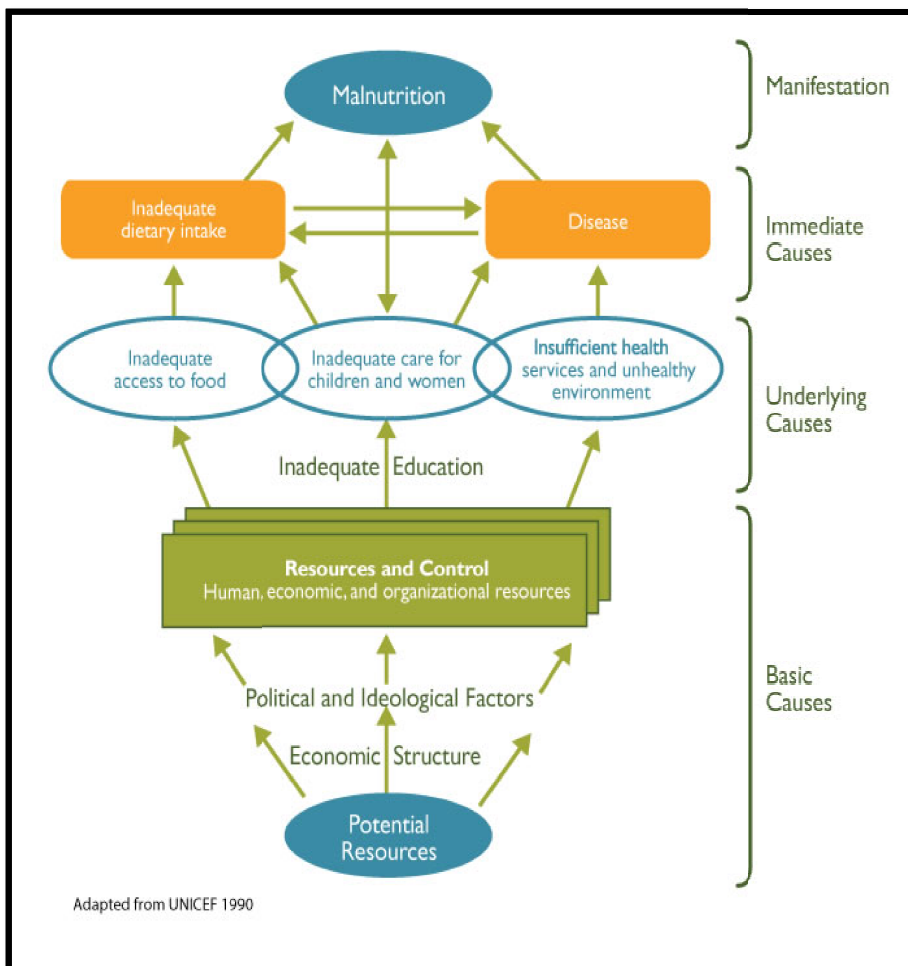


Figure 2.3 Conceptual framework for malnutrition. Source: UNICEF, 1998

2.2 Overview of the nutritional status of under-five children in Nigeria

2.2.1 Understanding malnutrition in child morbidity and mortality

Malnutrition is an outcome of poor nutritional status which occurs when a child's intake of food is insufficient to sustain the needs of the body (Garcia, 2012). It is also caused by the absence of sufficient nutrients and by disease conditions or illness (UNICEF, 1998). Malnutrition develops slowly over time by progressive deterioration of nutritional status. Malnutrition is a spectrum of diseases; Protein Energy Malnutrition (PEM) and Micronutrient Malnutrition. The World Health Organisation refers to PEM as "an imbalance between the supply of protein and energy and the body's demand for them to ensure optimal growth and function" (WHO, 1997). There are three types of clinical classification of PEM: marasmus (wasting from malnutrition), kwashiorkor, and marasmic kwashiorkor. The latter two are termed oedematous malnutrition.

Micronutrient malnutrition is the deficiency of essential vitamins and minerals that are needed in small amounts for various physiological functions, but which cannot be made in sufficient quantities in the body, and can only be gotten from consumed foods (Underwood 1998; Uchendu 2011). Micronutrient malnutrition is also known as "hidden hunger" (Burchi *et al.*, 2011), which in its broadest sense, denotes a chronic lack of micronutrients – vitamins and minerals – with dire consequences which may be long-term and profound (Steve-Edemba 2014). Vitamin A, iodine, iron and zinc deficiencies are among the major micronutrient deficiencies affecting under-five children in countries with high child morbidity and mortality (WHO, 2010).

Malnutrition in under-five children

Malnutrition affects all groups of people in a community, but infants and young children are the most vulnerable because of their high nutritional requirements for growth and development (Blosser and De Onis, 2005). Malnutrition in its undernutrition form accounts for 61% of childhood deaths from diarrhoea, 57% from malaria, 52% from pneumonia and 45% from measles (WHO/UNICEF, 2006). It also has adverse reproductive consequences, delayed mental and physical development as well as leading to death in childhood, adolescence and adulthood (FMOH, 2005). Malnutrition weakens the immune system, predisposing children to infectious diseases that can affect

development through direct and indirect pathways (Carter *et al.*,2003; Saunders and Smith 2010).Clinical and biomedical studies have confirmed the malnutrition- infection synergism (Pelletier *et al.*, 1993; Scrimshaw 2003; Solomons 2007;Macallan 2009; Bhutia 2014). The interplay between two significant immediate causes of malnutrition-- inadequate dietary intake and illness - tends to create a vicious cycle. Figure 2.4 shows the graphic linkages and interactions between infection and malnutrition. This vicious cycle needs to be broken by treatment of the infection and improved dietary intake. A malnourished child, whose resistance to illness is compromised, falls ill, and the state of malnutrition worsens (Pelletier *et al.*, 1993; Brown, 2003; Caulfield *et al.*, 2004; Umamaheswari *et al.*, 2010).

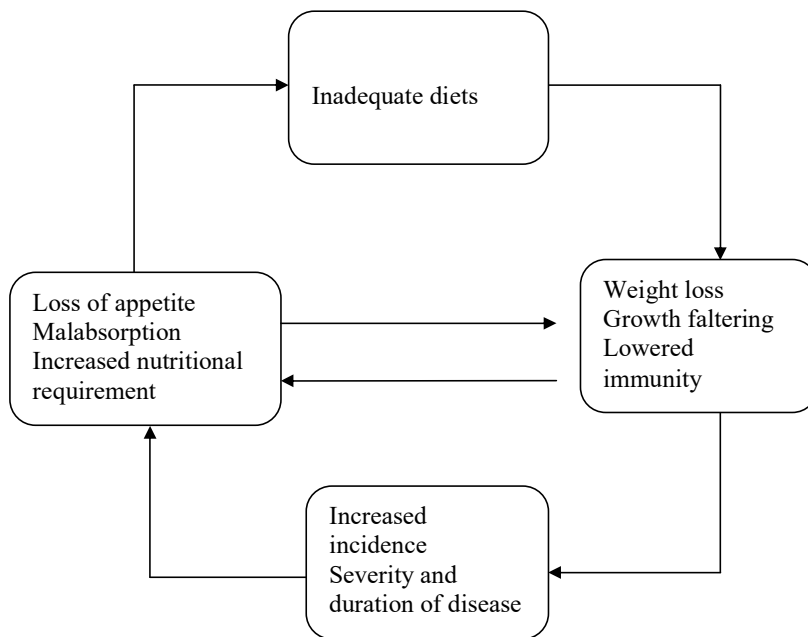


Figure 2.4 Infection-Malnutrition Cycle

Source: Adapted from UNICEF online course on Nutrition in Emergencies

Contribution of malnutrition to under-five child morbidity and mortality

In a series of works by Pelletier *et al* (1993; 1994; 1995) analysed the contribution of malnutrition to child mortality and they argued that it was wrong to presume that malnutrition is an additive cause of child mortality. They disputed also that deaths can be partitioned into those due to malnutrition and those due to other causes. Therefore through epidemiological statistical modelling Pelletier *et al* concluded that the relative contribution of malnutrition to mortality depends on morbidity rates and the contribution of morbidity varies according to the prevalence of malnutrition. They estimated the relative risk for mortality associated with different degrees of childhood malnutrition as 2.5, 4.6, and 8.4 for mild, moderate, and severe malnutrition respectively. A decade later, the WHO conducted a Comparative Quantification of Health Risks pooled from 10 cohort studies in which both weight-for-age category (<-3SDs; -3 to <-2SDs; -2 to -1SDs; and >-1SD) and the causes-of-death information were made available. The study found that all levels of underweight significantly increased malaria mortality rates with Relative Rate ratios (RRs) ranging from 2.1 (1.48, 3.02) for mild underweight to 9.5 (3.25, 27.66) for severe underweight.

In 2013 a pooled analyses involving children within the age of 1 week to 59 months in 10 prospective studies observed a clear dose-response relationship between the three anthropometric indices and under-five mortality (Olofin *et al.*, 2013). The pooled mortality showed that the Hazard Ratios (HRs) was 1.52 (95% CI 1.28, 1.81) for mild underweight; 2.63 (2.20, 3.14) for moderate underweight; and 9.40 (8.02, 11.03) for severe underweight. Olofin *et al* concluded that wasting was a stronger determinant of mortality than stunting or underweight because the HR for severe wasting was higher at 11.63 (9.84, 13.76) compared with 5.48 (4.62, 6.50) for severe stunting. The choice of HRs over RRs is based on the fact that RRs is cumulative over an entire study, using a defined endpoint, while HRs represent instantaneous risk over the study time period, or some subset thereof. In addition, HRs suffer somewhat less from selection bias with respect to the endpoints chosen and can indicate risks that happen before the endpoint. These merits of HRs over RRs make it an appropriate measure to reflect the 'dose-response' relationships existing between malnutrition and infection, and more importantly the effects at different levels of

z-scores. Though, some researchers in the field of child health often fail to highlight the potential contribution of malnutrition to the high rate of child morbidity and mortality.

Malnutrition in the first 1,000 days

The first 1,000 days covers the period between the woman's pregnancy and the first two years of her child's life. Malnutrition within this period can cause irreversible damage to children's brain development and their physical growth (UNICEF, 2008).

In 2008, the Lancet published five papers that made up the series on maternal and child undernutrition. Bryce *et al.*, (2008) stated in one of the papers that the period from pregnancy to 24 months of age is a crucial window of opportunity for reducing undernutrition and its adverse effects. This is because nutritional status before and during pregnancy influences child outcomes. When nutrition is poor; malnutrition, undernutrition, hunger or obesity it is damaging to pregnant women, infants and young children. Consequently, it leads to a diminished capacity to learn, poorer performance in school, greater susceptibility to infection and disease, and a lifetime of lost earning potential. Undernutrition during pregnancy, affecting fetal growth, is a major determinant of stunting and can lead to consequences such as obesity and nutrition-related non-communicable diseases in adulthood (WHO, 2014a)

The successive review by the Lancet on maternal and child under nutrition in 2013 recommends that programme efforts, as well as monitoring and assessment should focus on the first 1,000 days segment of the continuum of care. Ensuring every child has the right nutrition to start life during these precious 1,000 days. The nutrition that children get early in life is a critical building block for the growth and the development of their brains, health and immune systems. This underscores the importance of early initiation of breastfeeding, exclusive breastfeeding and appropriate and timely complementary feeding.

2.2.2 Nutritional status of under-five children in Nigeria

Nutritional status reflects a larger set of deprivations which are related to the living conditions to which a child is exposed and the social and economic opportunities of the care takers (Garcia, 2012), and is clearly compromised by diseases with an environmental component (Blossner and De Onis 2005). The deprivations are clearly explained in the conceptual framework for malnutrition and death. The outcome of these deprivations could be disability, malnutrition or even death. Malnutrition among under-five children is an image of their nutritional status.

Three anthropometric indices are commonly-used as measures of malnutrition: weight-for-height (wasting), height-for-age (stunting), and weight-for-age (underweight). Wasting represents the failure to receive adequate nutrition in the period immediately preceding the assessment and may be the result of inadequate food intake or a recent episode of illness causing loss of weight and the onset of malnutrition. Stunting reflects failure to receive adequate nutrition over a long period of time and is affected by recurrent and chronic illness. Stunting therefore, represents the long-term effects of malnutrition in a population and is not sensitive to recent, short-term changes in dietary intake. Underweight takes into account both acute malnutrition (wasting) and chronic malnutrition (stunting), but it does not distinguish between the two. A deficit (z-score below -2) in any one of these indices reflects malnutrition, and a z-score below -3 reflects a severe form of that condition (Caulfield *et al.*, 2004, WHO 2006; Garcia 2012).

Nigeria's Demographic Health Survey (NDHS) 2013, indicates 37% of children under-five years are stunted, and 21% are severely stunted, 29% underweight and 18% wasted, nationally. In addition, analysis by age groups showed that stunting increases with age, peaking at 46% among children age 24-35 months. Severe stunting shows a similar pattern, with the highest proportion of severe stunting in children 24-35 months. Stunting is higher among children in rural areas, (NPC and ICF Macro, 2014) and they are more likely to be stunted (43%) than those in urban areas.

An analysis of the trend in nutritional status of children under-five from 2003 to 2013 is presented in Figure 2.5. The trend showed no significant improvement in under-five

children’s nutritional status in Nigeria over a decade. Wasting in under-five children has increased by 39%, and underweight increased by 17%. However, there has been minimal reduction in stunting to 37% from 43%, resulting in a 12% reduction in stunting among under-five children. The implication of these statistics is that the rate of progress in reduction of under-five malnutrition has been slow. The trend shows a growing percentage of under-five children that are obese. The co-burden of undernutrition and obesity among under-five children in Nigeria is worrisome. This requires urgent attention from all stakeholders, policy and decision makers.

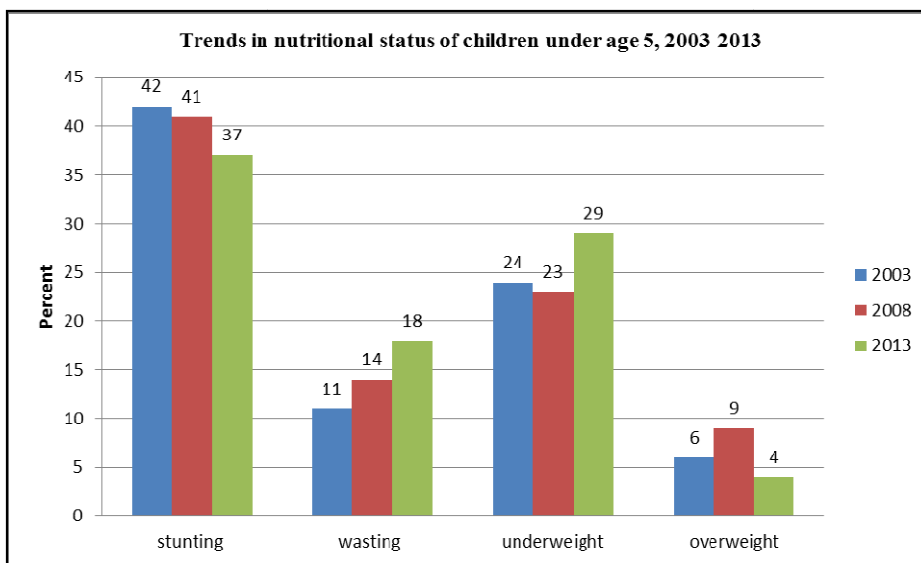


Figure 2.5 Trends in nutritional status of children under-five, 2003-2013.

Source: Adapted from NPC and ICF Macro, 2014

Regional trends in nutritional status of under-five children in Nigeria

Northern region

The figures 2.6 and 2.7 show the regional trends in nutritional status of under-five in Nigeria. The regional patterns show a persistence of inequality, with states in the North West and North East zones still experiencing higher rates of under-five undernutrition than states located in southern region. It is a paradox, that the North East and North West regions which are the food basket of the country have the highest rates of malnutrition among under-five children. Literature show mothers literacy level, knowledge and practice of infant and young child feeding in the region to be very poor; and accounts for the disparity when compared to other regions in the country (Visram *et al.*, 2014). The condition in the North East region has been worsened by the frequent attacks by the insurgent group called *Boko Haram*. The attacks by the insurgent group have resulted in displacement of communities and households, loss of livelihood, death of household heads, high number of children orphaned and living in vulnerable camps.

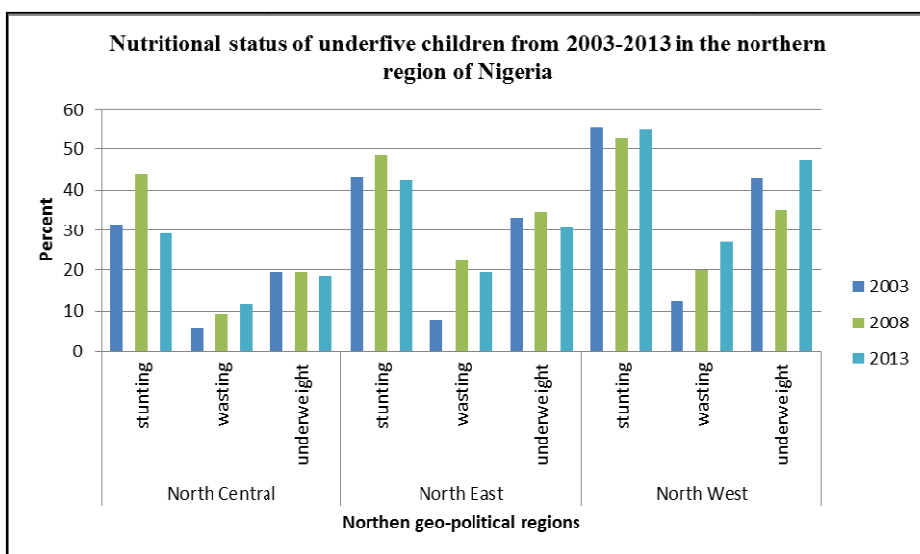


Figure 2.6 Trends in under-five nutritional status in northern region, 2003-2013

Southern region

The South East region has recorded the improved nutritional status for under-five children within the same period. Although, the nutritional status of under-five children in the South East can be considered good in comparison to the other regions, there is still a considerable number of under-five children requiring urgent attention in the region.

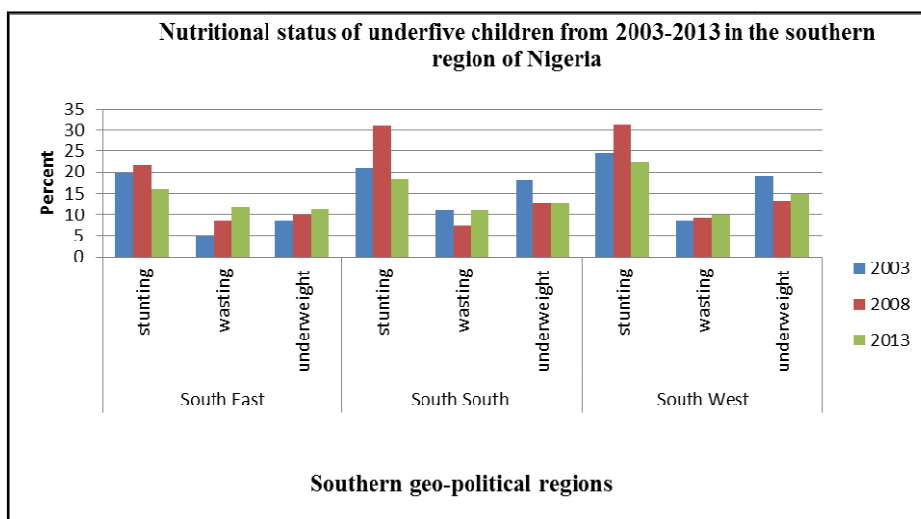


Figure 2.7 Trends in under-five nutritional status in southern region, 2003-2013

Nutritional status of under-five children by location of residence

The nutritional status of under-five children in rural Nigeria is poorer than that of children in urban Nigeria. Using data available from the NDHS 2003, 2009 and 2013, Figure 2.8 shows the trend in a decade. Higher percentages of children are stunted, wasted and underweight in the rural areas than in the urban areas. However, the trend showed that no significant progress has been made in improving the nutritional status of under-five children in both locations of residence in Nigeria over a decade.

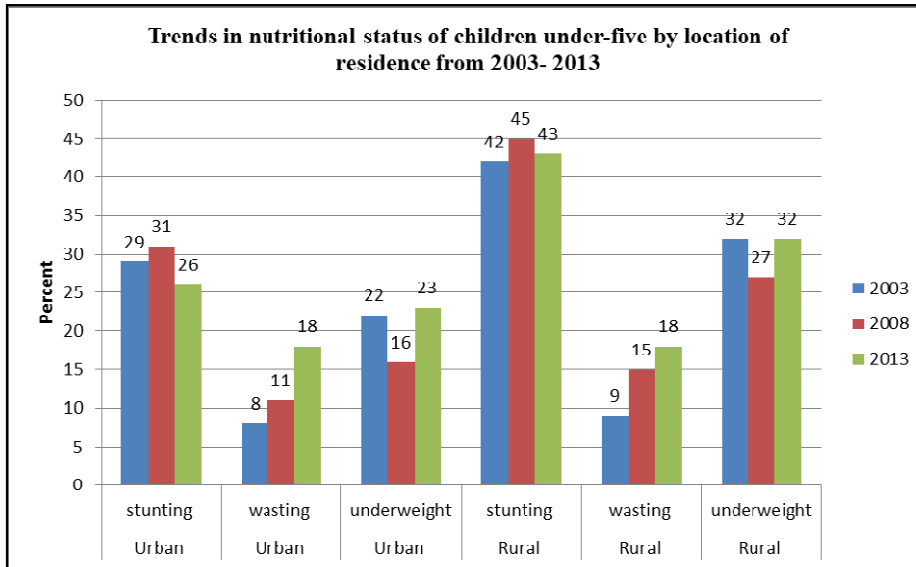


Figure 2.8 Trends in nutritional status of children under-five by location of residence
 Source: Data sourced from NPC and ICF Macro, 2004, 2009 and 2014

In a study to assess nutritional status of mothers and their under-five children in rural community in Oyo state (Fabunmi *et al.*, 2013) showed average stunting to be 37%, with males being more stunted (40.8%) than females (34.7%). The nutritional status of under-five children in a rural community in Balyesa state was assessed by Sawyer *et al* (2013). Sawyer *et al* finding showed wasting to be 20.0%, stunting 24.8% and underweight 17.1%. Manyike *et al* (2014) assessed the prevalence of malnutrition among pre-school children, ages (one to five years) in Abakiliki in Ebonyi state. The prevalence of stunting was 9.9%, and wasting was 9.7%. These studies corroborate reports from the NDHS.

In Nepal, a nutritional assessment of under-five children reported stunting as 37%, underweight 22.7% and wasting 25.7% (Ruwali, 2011). In the highlighted studies malnutrition was found to be a result of maternal, socio-economic and child individual factors. A comparative study in Kenya, stunting was found to be 47.0%, underweight 11.8%, and wasting 2.6% among under-five children (Olack *et al.*, 2011). Wondimagegn (2014) in a systematic review of the magnitude and determinants of stunting among

children in Africa revealed inappropriate complementary feeding practice, maternal under nutrition, household food insecurity, economic growth and maternal education as the principal determinants of stunting. The enumerated determinants by Wondimagegn are all operational at the household level, which lends credibility to the need to design intervention at the household level targeting mothers and other caregivers.

Micro-nutrient intake of under-five children in Nigeria

Nigeria has made some progress in reducing Vitamin A deficiency prevalence among under-five children. This has been achieved through the supplementation of Vitamin A to children between six and 59 months during immunisation programme and food fortification at three levels; mass or universal, targeted, and household. The Universal Salt Iodisation (USI), programme commenced in 1993 in Nigeria. At a time when only 40% of salt consumed in Nigeria was iodised. Over the following 5 years, goitre prevalence decreased to 11% at sentinel sites, and household access to iodized salt increased to 98 % (FMOH/UNICEF, 2007). However, Iron deficiency anaemia is still very high in the country. A study conducted in Enugu, South-east of Nigeria (Ekwochi *et al.*, 2014) showed the prevalence of Iron deficiency anaemia among anaemic under-five children to be 34.3%.

2.2.3 Infant and Young Child Nutrition

2.2.3.1 Breastfeeding

Breastfeeding is a socio-cultural practice by mothers acceptable in many societies. It is the feeding of infants from their mothers' breast milk. The WHO defines breastfeeding as simply the way of providing young infants all the required nutrients they need in the form of breast milk for their healthy growth and development. The Innocenti Declaration was adopted by UNICEF, representatives of state governments and some international organisations in 1990. The declaration stated that all infants be fed exclusively on breastmilk from birth to four - six months of age. Thereafter, children should continue to be breastfed, while receiving appropriate and adequate complementary foods, for up to two years of age or beyond (UNICEF, 1990b).

Categories of Breastfeeding

WHO/UNICEF in 1991 defined the following as categories of breastfeeding: breastfeeding, exclusive breastfeeding, predominant breastfeeding, full breastfeeding, complementary feeding, and bottle feeding.

Breastfeeding: The child has received breast milk direct from the breast or expressed.

Exclusive breastfeeding: The infant has received only breast milk from the mother or a wet nurse, or expressed breast milk, and no other liquids or solids with the exception of drops or syrups consisting of vitamins, mineral supplements, or medicines.

Predominant breastfeeding: The infant's predominant source of nourishment has been breast milk. However, the infant may also have received water and water-based drinks (sweetened and flavoured water, teas, infusions, etc.), fruit juice; oral rehydration salts solution (ORS), drop and syrup forms of vitamins, minerals and medicines, and ritual fluids (in limited quantities). With the exception of fruit juice and sugar water, no food-based fluid is allowed under this definition.

Full breastfeeding: Exclusive breastfeeding and predominant breastfeeding together constitute full breastfeeding.

Complementary feeding: The child has received both breast milk and solid or semi-solid food.

Bottle-feeding: The child has received liquid or semi-solid food from a bottle with a nipple/teat. Although bottle feeding was not strictly a 'breastfeeding' category it was considered essential to include because of its impact on breastfeeding (WHO/UNICEF, 1991).

WHO optimal infant feeding recommendation

WHO and UNICEF global recommendations for optimal infant feeding are exclusive breastfeeding for six months, complementary feeding-nutritionally adequate and safe complementary feeding starting from the age of six months with continued breastfeeding up to 2 years of age or beyond (WHO/UNICEF, 2003).

The WHO2009 guidelines for HIV and infant feeding recommend that national authorities in each country decide which infant feeding practice, i.e. breastfeeding with an anti-

retroviral (ARV) intervention to reduce transmission or avoidance of all breastfeeding, should be promoted and supported by their Maternal and Child Health services (WHO, 2010). This differs from the previous recommendations made by WHO in 2006 in which health workers were expected to individually counsel all HIV-infected mothers about the various infant feeding options, and it was then for mothers to decide between which option to practice.

In 2010, the Nigerian government convened a meeting of stakeholders and professional in the field of nutrition, health, paediatrics, PMTCT, and development donor organisations to deliberate on the WHO 2009 guidelines. The discussion was with the intent at reaching a consensus on the country's position on the WHO guidelines. The recommendation agreed was to promote a national message that will protect breastfeeding: all mothers, including those who are HIV-positive, should breastfeed their infants exclusively for 6 months and introduce complementary feeding at 6 months and continue breastfeeding until 12 months (USAID, 2010)

2.2.3.2 Initiation of breastfeeding

WHO and UNICEF recommend initiation of breastfeeding within the first hour of life, (UNICEF, 2008) as part of measures to encourage Exclusive breastfeeding. The early initiation of breastfeeding is both important for mother and child. Early suckling stimulates the release of prolactin, and helps in the production of milk and oxytocin which is responsible for the ejection of milk (WHO, 2009). In addition, it offers the child some measures of immunity from illnesses and diseases due to the consumption of colostrum the first milk produced by the mother which is yellowish in colour, and rich in nutrients and antibodies (UNICEF, 2013).

Mothers' place of child delivery has been identified as one of the most influencing determinant of mothers' early initiation of breastfeeding, Morhason-Bello *et al.*, (2009). This factor is accentuated by the disproportionate smaller population of skilled birth attendants compared to women who give birth at the facility, and child delivery by mothers at home all acting as major causes of delay in the initiation of breastfeeding especially amongst primiparous women (Morhason-Bello *et al.*, 2009). This is evident

amongst rural women who give birth more at home than at the health facility, thus posing constraints on early initiation (Yahya and Adebayo, 2013). The Nigeria Demographic Health Survey showed that 40.1% of mothers in urban areas initiated breastfeeding in the first hour after child birth, whilst 29.1% initiated timely in the rural areas.

Ogunlesi (2010), in assessing mothers' breastfeeding initiation at an infantwelfare clinic in Ilesa, South West Nigeria, noted that 37% of the mothers initiated breastfeeding within an hour. In North Central Nigeria, (Awogbenja, 2010) in a study among lactating mothers in Lafia LGA in Nasarawa state reported 36% of mothers interviewed initiated breastfeeding within one hour after delivery. In a related study, Okafor *et al.*, (2014) it was found that 59.2% of the 600 mothers interviewed in Lagos, Nigeria initiated breastfeeding within the first one hour of child delivery and mother's timeliness of breastfeeding initiation was strongly associated with their ante-natal attendance at formal health institutions during pregnancy. This finding is in contrast to earlier work by Awi and Alikor (2006), wherein they concluded that mothers ante-natal attendance at formal health institutions does not necessarily translate to mothers early initiation of breastfeeding, but rather the presence of a trained breastfeeding delivery assistant is a main predictor of early breastfeeding initiation.

In a study to identify factors influencing initiation of breastfeeding, Ajibade *et al.*, (2013) concluded that maternal age was the most influencing factor of mothers' choice of early initiation of breastfeeding. This finding is in contrast to results obtained in a similar study from Iran, where parents' health belief on the importance of breastfeeding initiation was the strongest predicting factor for early initiation of exclusive breastfeeding (Parsa *et al.*, 2015). This is in tandem with the study by Sholeye *et al.*, (2015) on breastfeeding mothers in Sagamu, South West Nigeria. In a Ugandan study, Bbaale (2014) showed that the probability of early initiation and practice of exclusive breastfeeding increased by 4-5% and 7-8% respectively if the mother had delivered the child in a hospital. The initiation of breastfeeding being aided by birth place at a health facility was observed by Adhikari *et al.*, (2014) among Nepalese mothers, whose practice of early initiation of breastfeeding rate was 66.4%. The conflicting views as to what factors predict early breastfeeding initiations are pitched in literatures. However none of the selected studies assessed the

pattern of breastfeeding initiation among rural mothers, probably investigations into rural mothers practice may help enlighten discuss.

2.2.3.3 Exclusive breastfeeding

Exclusive breastfeeding is the feeding of only breast milk to an infant for the first six months of life and is the best infant feeding strategy (Kramer and Kakuma, 2012). The World Health Organisation recommends that its duration should be for 6 months, and continuous breastfeeding till 24 months (WHO, 2001). The World Health Organisation approves and certifies that the giving of breast milk through the act of breastfeeding is biological, physiological, nutritional and a naturally recognised way of feeding infants (WHO, 2001). Engle and Lhotska (1999) described breastfeeding as an example of a practice that provides food, health, and care simultaneously to the child. Global trends on exclusive breastfeeding suggest the prevalence of exclusive breastfeeding among infants younger than six months in developing countries increased from 33% in 1995 to 39% in 2010 (Cai *et al.*, 2012). Trend in exclusive breastfeeding rates in Nigeria were 1%, 17%, and 13% in 1990, 2003, and 2008 respectively (NPC and ICF Macro 1990, 2004, and 2009). The current rate of exclusive breastfeeding in Nigeria is 17% (UNICEF, 2016).

Literature shows the benefits of breastfeeding infants to include: reduction in infections, and mortality among infants, improved mental and motor development, and protection against obesity and metabolic diseases later in the life course (Grantham-McGregor *et al.*, 1999; Jain *et al.*, 2002; and NPC and ICF Macro, 2009), with associated health benefits for the mothers also. Interventions promoting optimal breastfeeding could prevent 13% of deaths (Jones *et al.*, 2003). Nigeria has one of the highest rates of breastfeeding in the world, but very low rate of exclusive breastfeeding (Agho *et al.*, 2011; Agunbiade and Ogunleye 2012). In addition there have been situations where the current recommendation of exclusive breast feeding conflicts with local knowledge and practices of mothers (Davies–Adetugbo *et al.*, 1997; Okolie 2012), with no resolution insight.

Ogbonna and Daboer (2007), and Oche *et al.*, (2011), in their studies to assess current knowledge and practice of breastfeeding among mothers with infants in Nigeria showed that the increased knowledge and practice of exclusive breastfeeding is a function of

increased age and better educational status of the mothers. In a health facility based assessment of mothers' knowledge and practice of exclusive breastfeeding in Uyo, South South of Nigeria (Abasiattai *et al.*, 2014) observed that 42% of the women were able to define exclusive breastfeeding correctly while 7.0% of the respondents knew the ten steps to successful breastfeeding, and 44.5% of the women practiced exclusive breastfeeding. Alade *et al.*, (2013) in their study on exclusive breastfeeding among lactating mothers in rural community in South West Nigeria, reported poor practice of exclusive breastfeeding despite the high level of knowledge about exclusive breastfeeding exhibited by the mothers. This finding is in agreement with report from Agu and Agu (2011), and Onah *et al.*, (2014) among rural mothers from South East of Nigeria.

Agunbiade and Ogunleye (2012) in their study to evaluate constraints faced by mothers in practicing exclusive breastfeeding in South West Nigeria showed that only 19% of the mothers interviewed practiced exclusive breastfeeding. The survey showed the major constraints in exclusive breastfeeding to be: (i) the perception that babies continue to be hungry after breastfeeding (29%); (ii) maternal health problems (26%); (iii) fear of babies becoming addicted to breast milk (26%); (iv) pressure from mother-in-law not to breastfeed exclusively (25%); (v) pains in the breast (25%); (vi) and the need to return to work (24%). This finding confirms earlier study by Ukegbu *et al.*, (2011) among mothers of under-five children in Anambra states, South East Nigeria. Therefore it suffices to say that though Nigeria is largely heterogeneous in culture, religion, and language, mothers breastfeeding practices across Nigeria is quite uniform.

An assessment of the knowledge, attitude and practice of exclusive breastfeeding among lactating mothers living in two semi-urban areas in Lagos, Nigeria, Obilade (2015) showed that higher educational level and professional career was significantly associated with mothers' practice of exclusive breastfeeding. However, Obilade's finding was contrary to earlier work by Ogunlesi (2010) and Sadoh *et al.*, (2011), wherein the authors associated low practice of exclusive breastfeeding with mothers having a professional career. In an assessment of exclusive breastfeeding practice among 36 female medical doctors, (Sadoh *et al.*, 2011) reported that 11.1% practiced exclusive breastfeeding among the professionals. This low level of practice of exclusive breastfeeding by professional female doctors

resulted in Sadoh and colleagues concluding that the suboptimal breast feeding experience in these doctors and the identified knowledge deficits, may limit their effectiveness in promoting and supporting exclusive breast feeding among their patients and communities.

2.2.3.4 Breastfeeding and breastfeeding duration

The Lancet series on breastfeeding elucidated the benefits of breastfeeding to children, women and the society. Victora *et al.*, (2016) estimated that present rates of breastfeeding prevented almost 20,000 annual deaths from breast cancer, and an additional 20,000 are preventable by scaling up breastfeeding practices. The series also examined determinants of breastfeeding, as part of measures at improving breastfeeding practice. Rollins *et al.* (2013) noted the scaling up of known interventions, policies, and programmes as necessary factors that can rapidly improve breastfeeding practices by mothers and household members, health service providers, and the government.

Nigeria has one of the highest breastfeeding durations in the world. According to NDHS report 2013, the mean duration of any breastfeeding in Nigeria is 18.2 months. A higher duration in the rural areas of 19.5 months, highest among non-educated rural mothers (21.0 months) and mothers from the lowest wealth quintile (21.4 months). It has been found from research that if breastfeeding were scaled up to near universal levels, the lives of 823,000 children under-five would be saved annually in 75 low- and middle-income countries (UNICEF, 2016a)

Breastfeeding benefit women who are interested in spacing birth as it affects the period of postpartum insusceptibility by delaying the return of menstrual cycle (WHO, 2009). The effect is the basis for the family planning method known as *lactational amenorrhea* (LAM), which has been found to provide various levels of protection against pregnancy during the first six months of the postpartum period (Kuti *et al.*, 2007 and Archer *et al.*, 2012)

Bernard *et al.*, (2013) investigated the relationship between breastfeeding duration and cognitive development in French preschool children. The study showed that longer breastfeeding duration was associated with better cognitive and motor development in

two- and three-year-old children and a dose-response relationship was suggested. Similarly, Obermann-Borstet *et al.*,(2013) reported the possible protective effect of longer duration of breastfeeding against childhood obesity in young children.

2.2.3.5 Complementary feeding

Complementary feeding is one of the child survival interventions which have been proved to reduce child mortality by 6% (Jones *et al.*, 2003).Complementary feeding is usually introduced between the age range of between six and 24 months, which is the time of peak incidence of growth faltering, micronutrient deficiencies and infectious illness in children (Daniels and Adair 2005; Dewey and Adu-Afarwuah 2008).The guiding principles for complementary feeding of the breast fed child (PAHO/WHO,2003) defines complementary feeding as the process starting when breast milk alone is no longer sufficient to meet the nutritional requirement of infants, and therefore other foods and liquid are needed along with breast milk.The WHO notes that breastfeeding should not be decreased when starting complementary feeding; complementary foods should be given with a spoon or a cup, not in a bottle; foods should be clean, safe and locally available; and ample time should be given for young children to learn to eat solid foods.

This is a critical nutritional window for children, in which infants should be transiting from exclusive breastfeeding to receiving complementary foods in addition to continued adequate intake of breast milk (FAO, 2013). There are principles guiding programming for complementary feeding. They include education to improve caregiver practices; increasing energy density and/ or nutrient bioavailability of complementary foods; providing complementary foods, with or without added micronutrients; and fortifying complementary foods, either centrally or through home fortification including use of multiple micronutrient powder (MNP), in each case paying greater attention to food insecure populations(PAHO/WHO 2002).

Guiding Principles for Complementary Feeding of the Breastfed Child (PAHO/WHO 2002)

1. Practice exclusive breastfeeding from birth to 6 months of age, and introduce complementary foods at 6 months of age (180 days) while continuing to breastfeed.
2. Continue frequent, on-demand breastfeeding until two years of age or beyond.
3. Practice responsive feeding, applying the principles of psychosocial care.
4. Practice good hygiene and proper food handling.
5. Start at six months of age with small amounts of food and increase the quantity as the child gets older, while maintaining frequent breastfeeding.
6. Gradually increase food consistency and variety as the infant gets older, adapting to the infant's requirements and abilities.
7. Increase the number of times the child is fed complementary with foods as he/she gets older.
8. Feed a variety of foods to ensure that nutrient needs are met.
9. Use fortified complementary foods or vitamin-mineral supplements for the infant, as needed.
10. Increase fluid intake during illness, including more frequent breastfeeding, and encourage the child to eat soft, varied, appetising, favourite foods. After illness, give food more often than usual and encourage the child to eat more.

GUIDING PRINCIPLES FOR FEEDING NON-BREASTFED CHILDREN 6–24 MONTHS OF AGE(WHO, 2005)

1. Ensure that energy needs are met.
2. Gradually increase food consistency and variety as the infant gets older, adapting to the infant's requirements and abilities.
3. For the average healthy infant, meals should be provided four to five times per day, with additional nutritious snacks offered one or two times per day, as desired.
4. Feed a variety of foods to ensure that nutrient needs are met.
5. As needed, use fortified foods or vitamin-mineral supplements (preferably mixed with or fed with food) that contain iron.
6. Non-breastfed infants and young children need at least 400–600 mL/day of extra fluids in a temperate climate, and 800–1200 mL/day in a hot climate.
7. Practice good hygiene and proper food handling.

8. Practice responsive feeding, applying the principles of psychosocial care.
9. Increase fluid intake during illness and encourage the child to eat soft, varied, appetizing, favourite foods. After illness, give food more often than usual and encourage the child to eat more.

In an assessment of the association between child feeding practices and nutritional status using secondary data, Ruel and Menon (2002) concluded that the overall quality of young child feeding is difficult to assess because of the large number of characteristics involved (e.g., type and variety of food, number of meals, continuation of breastfeeding, or hygiene during preparation). Dewey and Adu-Afarwah (2008) in a systematic review of the efficacy and effectiveness of complementary feeding interventions in developing countries noted and added that complementary feeding intervention by itself cannot change the underlying conditions of poverty and poor sanitation that contribute to poor child growth. They advocated for the integration of other strategies that targeted improved water and sanitation, better health care and adequate housing.

A comparative study on Complementary feeding among children 6-23 months in rural villages in Osun State, Nigeria, Deji *et al.*, (2015) showed that feeding practices differed by age of children, marital status especially among married, and being married by mothers was shown to be statistically significant with timely initiation of Complementary feeding. Also, spousal support was one of the factors influencing Complementary feeding practices among caregivers. This finding is similar to results obtained previously by Semahegn *et al.*, (2014) among Ethiopian mothers where factors influencing mothers' timely initiation were attributable to mothers' educational level, geographical location, marital status, place of child birth, and level of fathers' educational level.

Olatona *et al.*, (2014) assessing the practice of mothers with children aged between six and 23 months in Lagos, Nigeria gathered that less than half of the respondents (48.4%) introduced drinks or foods at the age of six months. Even though majority (91.9%) continued breast feeding after introducing other foods, more than half (57.1%) discontinued breastfeeding before 12 months. Twenty four hours dietary recall revealed that the most common food given was cereals (65.9%) followed by fruits (46.4%) and

tubers (42.7%). Most of the respondents fed the child responsively (70.3%) and prepared foods hygienically (75.1%). They concluded that though the Complementary feeding practices were better than many other communities within and outside Nigeria, they were inadequate compared with the recommended standards by World Health Organisation.

In another study conducted in urban and rural communities in Osun state by Ogunba and Akinyele (2013) to assess the nutrient adequacy of complementary foods fed to infants between six and 24 months found specifically 9.5% of the children in the urban communities were fed once, 23.8% twice, 30.3% three times, and 25.6% four times a day. In the rural communities, 3.9% were fed once, 20.6% of the children were fed two times, 29.8% three times, and 28.5% four times a day. Twenty-four (24h) recall of snack consumption revealed that 13.5% and 14.3% of the children do not consume snacks at all, while 7.2% and 10.3% consumed snacks four times in the urban and rural communities, respectively. Mean nutrient consumption of the urban communities was 733.7kcal energy; 9.8g protein; 4.3mg Fe; 99.5mg Ca, and 121.7µg vitamin A. In the rural communities, the figures were 698.7kcal for energy, 7.1g protein, 2.7mg Fe, 68.4mg Ca and 188.3 µg vitamin A which were inadequate to meet their recommended nutrient intakes (RNI). The location of the communities was a key determinate in the caloric density, nutrient consumption and meal frequency consumed by the children.

2.3 Child Morbidity and Mortality

Global mortality in children younger than five years has fallen substantially in the past two decades from more than 12 million in 1990, to 6.9 million in 2011, but progress is inconsistent between countries (Bhutta *et al.*, 2013), and Nigeria happens to be one of such countries. Nigeria's Under-five mortality rate is high at 109 per 1000 live births (UNICEF, 2016). It has taken Nigeria five decades to reduce by half the 1970 under-five mortality rate of 285 per 1000 live births (UNICEF, 2012). Nigeria is one of the least successful African countries that have made improvements in child survival in spite of advances in universal immunisation and oral re-hydration therapy (ORT) for diarrhoeal disease, and the wealth of Nigeria's human and natural resources (USAID 2002; Ibekwe 2010). Childhood mortality rates differ substantially between urban and rural areas in Nigeria. The under-five mortality rate is 109 deaths per 1,000 births in the urban areas (UNICEF, 2016), as

compared with 167 deaths per 1,000 births in rural areas (NPC and ICF Macro, 2014). The main childhood diseases are malaria, diarrhoeal diseases, acute respiratory infections (ARI), and vaccine preventable diseases (VPD), which account for the majority of morbidity and mortality in childhood (UNICEF, 2012).

2.3.1 Trend in neonatal and under-five child mortality in Nigeria

2.3.1.2 Neonatal mortality trend in Nigeria

Neonatal mortality is the probability of a child dying during the first 28 days of life. There are global regional variations around the broad neonatal trend. In sub-Saharan Africa, newborn deaths account for about one third of the deaths of children under age five (UNICEF, 2016). In regions with lower levels of child mortality, neonatal deaths comprise approximately half of the total. The interventions needed to address the major causes of neonatal mortality are closely linked to those that protect maternal health. Hence, it is important to increase coverage of these interventions before, during and after pregnancy.

The NDHS provided a five-year periodic data on neonatal mortality commencing from 1999 to 2013. Neonatal mortality according to NDHS was 46 per 1,000 live births between 1999 and 2003, 43 per 1,000 live births between 2004 and 2009, and 37 per 1,000 live births between 2010 and 2013 (NPC and ICF Macro, 2014). UNICEF global data base on neonatal mortality does not provide neonatal mortality records for Nigeria earlier than 1990. Therefore, data from UNICEF global data base from 1990 to 2005 was used in developing a bar chart showing the trends as shown in Figure 2.9. Although slight variations exist between the figures provided by UNICEF and NDHS; both data sets show a similar pattern in neonatal mortality in the country. There has only been a 32% reduction in neonatal mortality between 1990 and 2015; a cumulative period of 25 years.

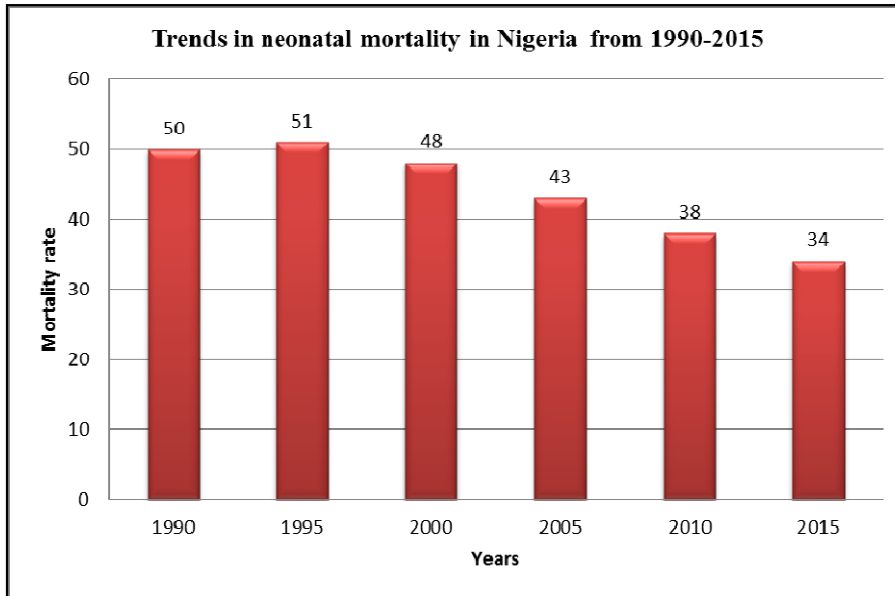


Figure 2.9 Neonatal mortality trend in Nigeria from 1990-2015
 Source: UNICEF global databases on child mortality estimates (UNICEF, 2016b)

In 2014 the Nigerian population commission conducted a study to assess the causes of neonatal mortality in the country using verbal and social autopsy (VASA). The main findings showed the following: 73% of the neonates were born at home in the Northern regions, compared to 24% in the South, most neonates' deaths occurred during the first week of life (72% and 79% in the Northern and Southern regions respectively), 57% of the neonatal deaths occurred at home, both parents, especially mothers of the deceased children, had little or no education, especially in the Northern regions and the vast majority of mothers of the deceased children got married at less than 16 years of age (NPC, 2016).

Akinyemi *et al.*, (2015) are of the opinion that literature is short of adequate information on the determinants of neonatal mortality, considering that about half of infant deaths occur in the neonatal period. Hence the authors investigated the trends and factors associated with neonatal mortality in Nigeria using the NDHS data for 1990, 2003, 2008

and 2013. The result showed sex of the child, birth size, birth interval and maternal age at child's birth, maternal utilisation of health services as important determinants of neonatal mortality. A comprehensive review so concludes that under-five and neonatal mortality are driven by similar determinants.

Darmstadt *et al.*, (2005) in the Lancet neonatal survival series estimated 40 per cent of neonatal deaths could be averted with key interventions around the time of birth. These include care by a skilled birth attendant, emergency obstetric care, and immediate newborn care (including breastfeeding support and clean birth practices, such as cord and thermal care) and newborn resuscitation. Another 30 per cent could be saved through 'kangaroo mother' care with skin-to-skin contact starting from birth, prevention or management of neonatal sepsis, treatment of neonatal jaundice and prevention of brain damage caused by birth-related oxygen deprivation.

2.3.1.3 Under-five mortality trend in Nigeria

Under-five Mortality is the probability of a child dying between date of birth and the fifth birthday. A review of under-five mortality rates in Nigeria using the UNICEF global data provides mortality rates from 1964 to 2015, and is shown in a bar graph as Figure 2.10. Analysis of the trend showed that remarkable reductions in under-five mortality were recorded in the decades 1970-1980 and 2000-2010. In the decade of 1970 to 1980 there was a 25% reduction in mortality, and 31% reduction in the decade of 2000-2010, respectively. Literature does not provide reasons for the progress recorded in these two decades. Using possible national historical events experienced between these periods, the following factors were associated with the progress recorded.

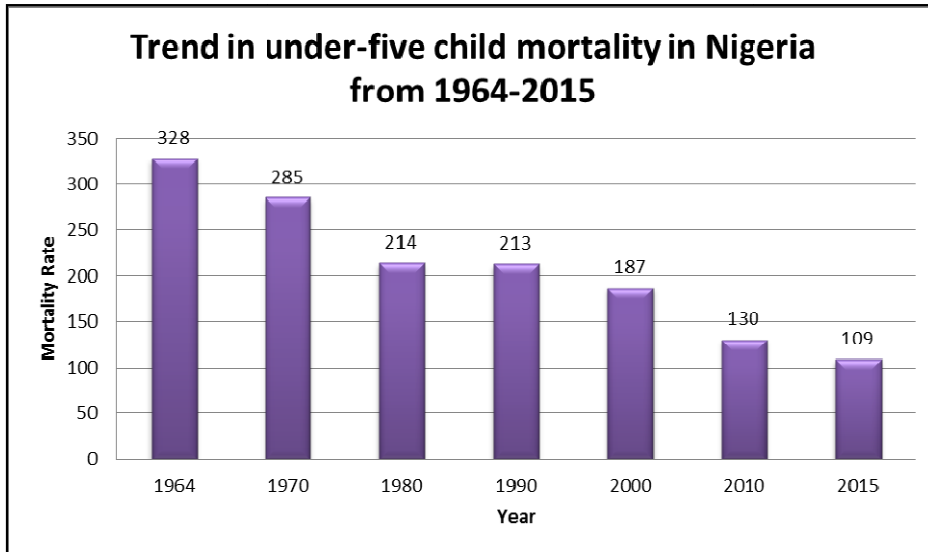


Figure 2.10 Under-five child mortality trend in Nigeria from 1960-2015
 Source: UNICEF global databases on child mortality estimates (UNICEF, 2016c)

First decade of 1970- 1980:- this was the period of enormous wealth generation from sales of crude oil by Nigeria. During this timeline, the exchange rate was 1.00 Naira to almost 2.00USD (Scott-Emuakpor,2010). There were substantial government investments at all levels of education, healthcare systems and infrastructures, transportation, housing, and general welfare. The decade also marked the end of the civil war which started in 1967.

Second decade of 2000-2010:- this was the period of transition to democratic rule after two decades of military rule. This saw the cancellation of Nigeria’s loan debt by the Paris club. The interest meant for servicing the loan was channelled into social and health services. Also, a substantial number of international development organisations that had left the country during the era of military rule returned to the country. This resulted in a quantum leap in development aid assistance to Nigeria.

In a study to assess the risk factors associated with under-five mortality in Nigeria, Kayode *et al.*, (2012) showed the following factors as having reduced odds of under-five mortality: health seeking behaviour of mothers, breastfeeding children for more than 18

months, use of contraception, small family size, having one wife, low birth order, normal birth weight, child spacing, living in urban areas, and good sanitation. Furthermore, the predictive model adopted in the study revealed that the likelihood of under-five mortality among the children of mothers that had their first marriage at age 20-24 years and ≥ 25 years declined by 20% and 30% respectively compared to children of those that married before the age of 15 years. Similarly, Mesike and Mojekwu (2012) showed from their study that child morbidity and mortality is linked directly with poor health facilities and indirectly with poverty. Poverty, malaria, absence of postnatal care, health scheme and breastfeeding were reported as the major determinants of child mortality in a study carried out by Bello and Joseph (2014) in Oyo State, Nigeria.

The information above represent results from data analyses of researches, nevertheless there is the need to put a social outlook in the discus by analysing the knowledge, attitude and perception of people towards the causes of child mortality in Nigeria. An assessment of the perception and attitude towards child mortality among people of the Yoruba tribe in SouthWest Nigeria by Ogunjuyigbe (2004) showed that more than half of the 1695 respondents had a firm belief in the inevitability of child mortality, which is referred to as *Abiku*; and translated literallyborn to die. In South East Nigeria *Abiku* is referred to as *Ogbanje* and the southern Nigerian people hold the same view of *Ogbanje's* existence, and spiritual orchestration of their deaths (Asakitikpi, 2008).The implication of this finding is that death of children below five years may continue to be viewed as an unavoidable rather than the consequence of social, environmental and biological interactions.

2.3.2 Global under-five child mortality projections

Murray and Lopez (1996) made projections based on the global burden of diseases which indicated that malaria, diarrhoeal diseases, acute respiratory infections (ARI), and vaccine preventable diseases (VPD) conditions will continue to be a major contributor to child deaths in the 2020's unless significant efforts are made to control them. These projections were based on trends in diseases causing mortality among children under-five years between the year 2000 and 2010, shown in Figure 2.11. In an updated systematic analysis on the global, regional, and national causes of child mortality from 2000-2013, with

projections to inform post-2015 priorities, (Liu *et al.*,2015) showed that the reduction in pneumonia, diarrhoea, and measles collectively were responsible for half of the 3.6 million fewer deaths recorded in 2013 versus 2000. Furthermore, child mortality causes with the slowest progress were congenital, preterm, neonatal sepsis, injury, and other causes. Liu and colleagues concluded that if present trends continue, 4.4 million children younger than 5 years will still die in 2030, with sub-Saharan Africa contributing 33% of the births and 60% of the deaths in 2030, as compared with 25% and 50% in 2013, respectively.

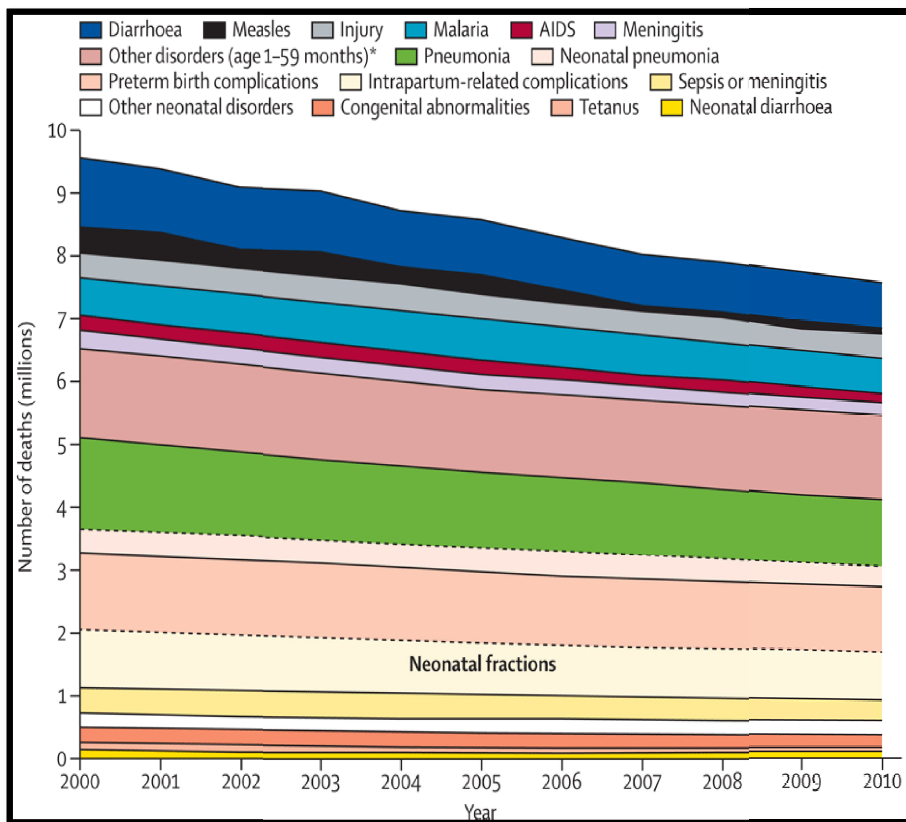


Figure 2.11 Global trends in burden of childhood deaths in 2000–2010. Source: Murray and Lopez (1996)

The next sub-section of this literature review is aimed at looking at four major childhood diseases; diarrhoeal diseases, malaria, acute respiratory infections (ARI), and vaccine preventable diseases (VPD) contributions to child mortality. Although it is not in the remit of this study to investigate the determinants of morbidity and mortality among children, it is imperative to establish information on the causes as a guide in proffering solutions to mothers.

2.4 Diarrhoeal, Acute Respiratory Infection and Malaria Diseases in Under-five Children

2.4.1 Diarrhoeal diseases in under-five Children

Diarrhoea is defined as the passage of three or more loose stools in a 24-hour duration (Ashrafet *al.*,2013), a loose stool being one that would take the shape of the container. According to WHO and UNICEF there are about two billion cases of diarrhoeal diseases worldwide every year, and 1.9 million children below 5 years of age mostly from developing countries die from diarrhoea each year, (NPC and ICF Macro2008; Farthing, 2012). Diarrhoea may also increase the risk of acute respiratory infection in the short term by causing acute loss of micronutrient, putting stress on the immune system, dehydration or immobilisation, thereby creating a vulnerable period of increased risk of infections (Schmidt *et al.*,2009).

Children within the 12-23 months age group are more prone to diarrhoea than any other age group in Nigeria (NPC and ICF Macro, 2014). This is not unconnected with the introduction to family diets, poor hygiene conditions and unsafe drinking water (Agedew *et al.*,2014). Most child mortality from diarrhoea is due to dehydration, mis-management or delayed management of the disease, and when episodes are treated in the home by mothers (Ghasemi *et al.*,2013). In a study by Awoyemi *et al.*, (2012), in Iseyin area of Oyo State, it was found that diarrhoea infection, poor sanitation, and age of child are key factors that increase the likelihood of malnutrition among children in the study area.

Akpede *et al.*,(1996) conducted focus group discussions involving rural and urban residents drawn from Kanuri and Bura settlement to assess the perception and treatment of diarrhoea among major ethnic groups in NorthEast Nigeria. Awareness of

oral rehydration therapy (ORT) was universal among participants, but knowledge of its function and the preparation of the sugar-salt solution (SSS) were markedly low among the Kanuris, especially in rural areas. Reported SSS use paralleled the knowledge of ORT function/SSS preparation and seemed heightened by church-fellowship activities among the rural Buras. Surprisingly, tasting was apparently not realised by participants to be an important step in SSS preparation. These preliminary results suggest that knowledge of ORT function and SSS preparation need further emphasis in ORT awareness campaigns, and religion-based activities could be a potent and actualisable method of ORT promotion. Although most Oral Rehydration Salt (ORS) is in form of a sugar-salt solution, but over the years people have tried adding a variety of compounds (glucose polymers) such as whole rice, wheat, sorghum and maize (Lassi *et al.*, 2014).

In a study to assess the morbidity pattern among under five children of market women in two major markets in Ibadan, Omokhodion *et al.*, (2003) showed that low educational status of mothers and poor environmental sanitation may put children at risk of diseases especially diarrhoea. Also, examining mothers' knowledge and usage of ORT in diarrhoea treatment in Ibadan Metropolis, Asakitikpi (2010) found that mothers' knowledge of ORT did not translate into the use of ORT during episodes of diarrhoea in children, and mothers' knowledge of the function of ORT showed a significant relationship with use. In addition, mothers' first source of knowledge about ORT was from the clinic setting while subsequent encounters took place through personal networks and radio. In another study conducted in Jos, diarrheal episodes were found to have a bivariate association with mothers' educational status, family type, family size, breastfeeding, and sex of child. However, only mother's educational status, diarrhoea in other sibling, and breast feeding were significantly associated with the occurrence of diarrhoea (Yilgwan and Okolo, 2012).

Rotavirus vaccines represent an important preventive approach to reducing rotavirus infections and, along with therapeutic interventions such as oral rehydration solution and Zinc supplementation, present an opportunity to decrease diarrhoea morbidity and mortality (Munos *et al.*, 2010). Although not yet available for use in Nigeria, a multicentre trial test of the vaccine in South Africa and Malawi among infants showed an overall efficacy of 30.2% against all-cause effect of severe gastroenteritis (Madhi *et al.*, 2010),

which was lower than observed in European and Latin American studies. The authors could not determine what possible factors were responsible for the low efficacy in Africa.

2.4.2 Acute respiratory infection

Acute respiratory infections (ARIs) are classified as upper respiratory tract infections (URIs) or lower respiratory tract infections (LRIs), and the common LRIs in children are pneumonia and bronchiolitis (Eric *et al.*,2006). Pneumococcalinfection is caused by the bacteria *Streptococcus pneumoniae or pneumococcus*, Falade *et al.*,(2009), and includes serious diseases such as meningitis, bacteraemia, pneumonia, as well as milder but more common illness such as sinusitis and otitis media (WHO, 2012). Pneumonia was responsible for 15% of the global cause of death among under-five children in 2013 (Liu *et al.*,2015).In a study to assess the most prevalent illness among infant attending an Infant welfare clinic in Ado Ekiti, South West of Nigeria, Bamidele *et al.*,(2014) reported Pneumonia diagnosis in 34.8% of the 650 infants that utilised the health clinic over a two year period.

The epidemiology of childhood pneumonia and that of diarrhoea overlap, which might be partly because of shared risk factors, such as undernutrition, suboptimum breastfeeding, and zinc deficiency(Fischer *et al.*, 2013).The common signs of Pneumonia in children are coughing, rapid breathing and fever. The Nigeria demographic health survey of 2013 showed that children are more predisposed to having pneumonia if they are within the age bracket of 12-23 months, live in rural areas, are resident in North East geopolitical zone of Nigeria, have mothers who smoke Tobacco, and belong to families from lower wealth quintiles(NPC and ICF Macro, 2014). The age bracket 12-23months in which Pneumonia was prevalent as reported by the 2013 NDHS is contrary to that observed in an earlier study by (Falade *et al.*,2009),wherein children ages between two and 11 months were more susceptible to Pneumonia.However, like many other communicable infections, Pneumonia is vaccine-preventable.The available interventions for Pneumonia are primary prevention by vaccination and secondary prevention by early case detection and management (Agarwal and Bajpai, 2015).

Onyango *et al.*,(2012) sought to identify risk factors for severe pneumonia in children under the age of five years in Western Province of Kenya. They identified delay in seeking treatment for three days or more, and contact with an individual with upper respiratory tract infection as independent risk factors for severe pneumonia. Onyango and colleagues concluded that co-morbidity, contact with upper respiratory tract infection and delay in seeking treatment were risk factors for severe pneumonia, and recommend health education regarding appropriate health seeking and the need to engage community health workers in pneumonia prevention, control and treatment as measures in combating mortality associated with Pneumonia amongst children. This finding is similar to a study in rural Bangladesh among mothers, wherein mothers were not knowledgeable about the early danger signs of pneumonia in their children, and thus case presentation of children were late at the health facility (Ferdous *et al.*,2014).

A study to assess pneumonia caring practices for children among 2400 mothers in Imo state, South East of Nigeria, Onwunaka *et al.*, (2015) showed mothers level of education, parity and type of occupation as factors influencing mothers' health seeking behaviour, and compliance with instructions from health service providers. Parental knowledge about childhood immunisation vaccines in two health districts in Cameroon prior to the introduction of 13-valent Pneumococcal Conjugate Vaccines (PCV-13) was assessed by Libwea *et al.*,(2014). The findings showed 19% of 205 parents/guardians were aware of the availability of the PCV-13. In addition, a logistic modelling identified important associations between parental socio-economic/demographic factors and good knowledge on pneumonia disease burden and prevention. The federal government in 2013 introduced Pneumococcal Conjugate Vaccine (PCV) into the National immunisation programme to address childhood pneumonia mortality in the country. The most critical step in effective management of pneumonia entails that families or caregivers must recognize the symptoms and then ensure appropriate care immediately for the sick child (Agarwal and Bajpai, 2015).

2.4.3 Malaria diseases

Malaria is a preventable and treatable mosquito-borne infection; and is a major cause of death in infancy and childhood in many developing countries (WHO, 2015). Malaria

continues to be the most common reason for hospital visits, Ughasoro *et al.*,(2013) especially among children. In 2015, 97 countries and territories had ongoing malaria transmission and an estimated 3.2 billion people – nearly half the world’s population – were at risk of malaria (WHO, 2015). The complexity of the malaria parasite makes development of a malaria vaccine a daunting task (WHO, 2015). There is a plethora of studies in literature assessing and reviewing malaria occurrence, management and programmes; being guided by the objectives of this study, a selected few are discussed below.

In a study to determine the malaria prevalence among children between the ages of one and fifteen years attending a health facility in Abuja, North Central, Nigeria, Nmadu *et al.*,(2015) showed that malaria infection was found to be most prevalent among 2-5 years old, (29%) while ages 6-10 and 11-15 yrs both had 17.5% infection. There was no significant difference in prevalence among the male and female children, and the most prominent specie in the community was *Plasmodium falciparum*. In a related study to assess the burden of malaria and effectiveness of malaria control programme among 1200 household in Asa LGA, North Central Nigeria (Salihu and Sanni, 2013) revealed that the burden of malaria dropped from 13.3% in 2003 to 7.3% in 2011 in the study location. The authors accounted this reduction in malaria to the increased access to insecticide treated nets in the households. However, the study overlooked the inter-relationship between availability, accessibility, affordability and acceptability in the utilisation of health promotion materials.

Mothers play a critical role in malaria identification, care, treatment and management, as they are the first to notice the signs and symptoms in the children before other household members. Thus it is imperative that the knowledge and perception of mothers’ inclusive of women who are the front liners in the provision of care be explored. Adeyemo *et al.*,(2014) assessed the knowledge and practices of home management and prevention of malaria, in Osun South West of Nigeria among 837 mothers of under-five children. The results showed that 75% of the mothers scored less than 40% on knowledge of causes, transmission and symptoms of malaria, 45.2% scored less than 40% in knowledge of prevention, 97.7% scored less than 40% in practices of home management and 63.3%

scored less than 40% in preventive practices. In a similar study aimed at investigating the perceptions, prevention and treatments practices for childhood malaria by mothers in rural communities, in Ise-Orun, Ekiti State, South West Nigeria, by Orimadegun and Ilesanmi (2015) showed that approximately 51% of the mothers had poor perception and 14.2% ascribed malaria illness to mosquito bite only. Majority (85.8%) of the mothers practiced malaria preventive measures, including: Insecticide treated nets (70.0%), chemoprophylaxis (20.1%) and environmental sanitation (44.8%). Also, of the 200 mothers whose children had malaria fever within the 3 months prior to the study visits, home treatment was adopted by 87.5%. Local herbal remedies were combined with orthodox medicine in the treatments of malaria for 91.5% of the children. The main reasons for not seeking medical treatment at existing formal health facilities were high cost, challenges of access to facilities and mothers' preference for herbal remedies. Lack of formal education was the only independent predictor of poor malaria perceptions among mothers.

In a study to determine the practice of malaria diagnosis and treatment in a tertiary hospital in South East, Nigeria Ughasoro *et al.*, (2013) observed a high practice of presumptive treatment and few cases of a differential diagnosis. The implication according to the authors is that many non-malaria cases have been treated with antimalarial drugs, contributing to drug wastage and lack of confidence in antimalarial medication when the symptoms persist after completion of wrongly used antimalarial therapy. While the presumptive treatment of fever with anti-malarial medication is advocated in many countries where malaria is endemic (NPC and ICF Macro, 2014), the need for thorough medical diagnosis cannot be over emphasised especially in a facility setting. In addition there has been a call to stop presumptive treatment of malaria and shift towards use of rapid diagnostic tests (Schwartz *et al.*, 2012), although it must be confirmed by either microscopy or Polymerase Chain Reaction (PCR) to be counted as a case (Mali *et al.*, 2010).

At the policy level, the government of Nigeria instituted the National Malaria Control Strategic Plan (NMCSP). The plans priorities are: (i) to reduce malaria related mortality, to reduce malaria parasite prevalence in children under five, (ii) to increase ownership and

use of insecticide-treated nets (ITNs) and long-lasting insecticidal nets (LLINs), (iii) to introduce and scale-up indoor residual spraying (IRS), (iv) to increase the use of diagnostic tests for fever patients, (v) to improve appropriate and timely treatment of malaria, and (iv) to increase coverage of intermittent preventive treatment (IPT) of malaria during pregnancy (FMOH and NMCP, 2009).

The WHO Global Technical Strategy for Malaria 2016–2030 was adopted by the World Health Assembly in May 2015. The document was developed in close alignment with the *Roll Back Malaria Partnership's Action and Investment to defeat Malaria 2016–2030 – for a malaria-free world* to ensure shared goals and complementarity. WHO is now working on developing regional implementation plans to roll out the technical strategy.

2.4.4 Vaccine preventable diseases

Immunisation remains one of the most important public health interventions and a cost effective strategy to reduce both the morbidity and mortality associated with infectious diseases (Odusanya *et al.*, 2008). Immunisation prevents illness, disability and death from vaccine-preventable diseases including cervical cancer, diphtheria, hepatitis B, measles, mumps, pertussis (whooping cough), pneumonia, polio, rotavirus diarrhoea, rubella and tetanus (WHO, 2015). The World Health Organisation launched the Expanded Programme on Immunisation (EPI) in 1974 (Machingaidze *et al.*, 2013), while Nigeria launched her Expanded Programme on Immunisation in 1979 (Ophori *et al.*, 2014). Nigeria's EPI was later re-named National Program on Immunisation and anchored the coordination, procurement of vaccines and distributing them to zonal cold stores. According to the Nigerian Federal Ministry of Health, (FMOH) a child is considered fully vaccinated if she or he has received Bacille Calmette-Guérin (BCG) to vaccinate against Tuberculosis; three doses of vaccine to prevent diphtheria, pertussis, and tetanus; at least three doses of polio vaccine; and one dose of measles vaccine, during the first year of life (Ophori *et al.*, 2014). In addition, routine immunisation of children is provided largely through the public health system in Nigeria (Ekure *et al.*, 2012).

In 2014, an estimated 18.7 million infants worldwide were not reached with routine immunisation services such as the third dose of Diphtheria, Tetanus and Pertussis

(DTP3)vaccine. More than 60% of these children lived in 10 countries: the Democratic Republic of the Congo, Ethiopia, India, Indonesia, Iraq, Nigeria and Pakistan, the Philippines, Uganda and South Africa (WHO, 2015). In an assessment of the current trend of Immunisation in Nigeria, Ophori *et al.*,(2014), identified the following as factors affecting routine immunisation in Nigeria: (i) misperception of routine immunisation by mothers and caregivers, (ii) influence of religion, (iii) inadequate cold chain equipment,(iv) political problems, (v) rejection of routine immunisation, and (vi)shortage of vaccine and immunisation supplies.

Legesse and Dechasa (2015) assessed the factors associated with complete immunisationamong children aged 12 to 23 months in Sinana district, Bale Zone, Southeast Ethiopia.The result showed that 76.8% of the 591 children were fully vaccinated by card plus history. Also, the following factors were significantly associated with full immunisation: (i) antenatal care follow up, (ii) being a farmer, (iii)being father with secondary and above educational level, (iv)having household family income greater than\$52 USD, (v) those whose average walking time from home to health facilities is less than an hour, (vi)those who had ever discussed about immunisation with health extension worker and (vii)mothers' with sufficient knowledge on immunisation.

In a study to examine the predictors of BCG immunisation status among infants in northern Nigeria using a behavioural-ecological model, Babalola and Lawan (2009) found only 37.3% of the totalchildren had received BCG vaccine, and revealed that BCG immunisation status in northern Nigeria is influenced by multiple layers of factors, including child's characteristics, parental or household factors, community characteristics, vaccine supply and the policy environment. At the child's level, place of birth and ownership of an immunisation card are the two most significant predictors. The parental and household predictors of BCG immunisation status include maternal use of antenatal care, maternal knowledge about immunisation, maternal exposure to child health information, social influence and paternal approval of immunisation. Both the regularity of vaccine supply to the health facility and the state of residence are associated independently with BCG immunisation status. These findings stress the need for interventions at multiple levels in order to increase BCG immunisation

status. The evaluation findings by Babalola and Lawan (2009) in Nigeria, and Legesse and Dechasa (2015) in Ethiopia, shows that the challenges confronting childhood immunisation in Africa are similar.

In a study to assess vaccination coverage and its determinants in a rural community, in Edo State, South of Nigeria, Odusanya *et al.*, (2008) observed a significant higher vaccination rate amongst children whose mothers possessed a vaccination card (69.7%), as compared to children whose vaccination status were confirmed by maternal history (52.3%). The authors also noted that mothers' knowledge of immunisation and vaccination at a privately funded health facility were significantly correlated with the rate of full immunisation. In Balyesa State, Southern Nigeria, Itimi *et al.*, (2012) assessed the possible effects of greater community participation on immunisation coverage, by comparing the immunisation coverage in a rural community with a functional community health committee, with an urban community, with no distinct community structure. The results showed that 11.46% of the 288 children in the rural community were not immunized, compared to 47.04% of 270 in the urban community. However, the dropout rate in the rural community was higher; with a DPT dropout rate of 77.34%, compared to 12.39% in the urban community. Most of the reasons given in the urban community for the incomplete immunisation were linked to lack of motivation, and include relocation (11.34%) and the adverse rumour about childhood immunisation (17.23%), while the reasons in the rural community were mostly health facility related, and included the absence of the vaccinator (20.46%) and non-availability of vaccines (26.64%). The unavailability of vaccines and poor funding for vaccines continues to mar efforts at ensuring nation-wide immunisation coverage for under-five children.

The Global Alliance for Vaccines and Immunisation (GAVI) now known as the Gavi Alliance was established in 2000 as a global health partnership of public and private sector organisations dedicated to "immunisation for all" in poor countries through immunisation financing. The countries that are eligible for Gavi support determine their immunisation needs, apply for funding and oversee the implementation of their vaccination programmes. Gavi's co-financing policy requires that recipient countries contribute towards the cost of the vaccines. This further strengthens ownership and long-term sustainability of

immunisation programmes. The Gavi Alliance has between the year 2000 and 30th September, 2015 disbursed to the Nigerian government a total of \$465,642,683(Four hundred and sixty-five million, six hundred and forty-two thousand, six hundred and eighty-three US Dollars) for non-vaccine support and vaccine support at a percentage ratio of 39: 61 respectively(Gavi, 2015).

In 2012, the Nigerian government introduced the pentavalent vaccine into routine immunisation schedule. Pentavalent vaccine is a combination of five vaccines-in-one that prevents diphtheria, tetanus, whooping cough, hepatitis b and haemophilus influenza type b, all through a single dose (WHO, 2014). In addition, on the 25th September, 2015, the World Health Organisation delisted Nigeria from the list of countries wherein Polio is endemic (Channels Television News, 2015).

However, the country still needs to continue routine immunisation, surveillance, and health education to ensure that there is no longer any outbreak of Polio in any part of the country which will enlist Nigeria again.

2.5 Parental involvement in child health

2.5.1 Maternal education, child morbidity and mortality

The nutrition of the infant after birth is strongly influenced by the choices made by the child's mother or caregiver, Engle and Lhotska (1999). Mosley and Chen(1984); Cadwell(1990); Akmam(2002); Soares (2007); Osinusi (2009); Smith (2010) reported in their studies that mothers' health choices for their children are influenced by maternal education. However, there exist conflicting views on what can be termed as education. There are growing concerns that there is a difference between general education (acquired through formal schooling) and health or nutrition education (Akmam, 2002). While the former enables a mother to become literate and hence gain access to the understanding of written material, the latter provides her with information only on certain health issues. However, formal education is time consuming and a long term action, and to get positive results for the improvement of the health of the illiterate masses, within a short time, health education might be a better choice(Adimora *et al.*,2011).

Does mother's education affect child nutritional status in the context of urban poverty in Kenya? This was a study question posed by Abuya *et al.*, (2012). The inference from the study of Abuya *et al.* showed that mother's education persisted as a strong predictor of child's nutritional status in urban slum setting after controlling for other factors. Conversely, an earlier work by Appoh and Krekling (2005) to assess maternal nutritional knowledge and child nutritional status in Ghana found that maternal nutrition knowledge was independently associated with nutritional status after the effects of other significant variables were controlled for. Also, maternal education on the other hand was not found to be independently associated with nutritional status. They concluded that mother's practical knowledge about nutrition may be more important than formal maternal education for child nutrition outcome. Burchi (2010), in an assessment of mother's schooling and nutrition knowledge as determinates of anthropometric status of preschool school children in Mozambique, concluded that mothers' nutrition knowledge contributes to increase in heights among extremely deprived children, and that mothers' formal education and household wealth are slightly more important for relatively well-off children.

An assessment to determine if there was a relationship between maternal educational level and child feeding practices among kindergarten in Malaysia by Adnan and Muniandy (2012) showed that children of mothers with secondary school qualification practiced exclusive breastfeeding up till 6 months, and had higher prevalence of wasting (14.3%), However, children of mothers with diploma and above in qualification had higher prevalence of obesity (13.9%), had higher fast food intake (70.8%) and had higher frequency of skipped breakfast (47.2%).

A study conducted in Nigeria assessing the effect of maternal literacy on nutritional status of children under-five years in semi-urban community in Zaria, showed that maternal literacy had a significant relationship with nutritional status of children. Nevertheless, the study only showed a statistical significance of maternal literacy for stunting (Sufiyan *et al.*, 2012). In another study by Owoaje *et al.*, (2014) children whose mothers had less than secondary level education had higher risk of being undernourished than those whose mothers had been educated beyond secondary school level. Similarly, Ajao *et al.*, (2010) assessing factors influencing undernutrition among under-five children in Ile-Ife, South

West Nigeria, gathered that lower maternal education was significantly associated with stunting in the children.

However, Girma *et al.*, (2002) noted in a study among Ethiopian mothers, that women who receive even a minimal education are generally more aware than those who have no education of how to utilise available resources for the improvement of their own nutritional status and that of their families. The UNICEF conceptual framework showed that many proximate determinants may be directly influenced by a mother's education to radically alter chances for child survival. In tackling the issue of low women's education, Nigerian government has institutionalized the Universal Basic Education (UBE), to ensure that every girl child has access to at least the first 9 years basic education. This has increased enrolment of girls in school, but the dropout rates still remain very high (ActionAid, 2014), especially in Northern Nigeria.

2.5.2 Fathers' involvement in Child health and nutrition in Nigeria

Mothers continue to be the focus of interventions aimed at improving children's health, nutrition and welfare in Nigeria. Although important to public health, as mothers and women are often the primary care givers, Budlender (2008). However, the role of fathers has often been overlooked (Hill *et al.*, 2012). In Nigeria, men constitute the main decision makers, and their reproductive health preferences and motivation usually influence their wives reproductive outcomes (Isiugo-Abanihe, 2010). Little is known if fathers' health preferences also influence their children's health outcomes in Nigeria.

Fatherhood, like motherhood represents an important role which involves responsibility, and, for accepting this role one needs to be well prepared (Tehrani *et al.*, 2015). A father is defined as an involved father if his relationship with his child can be described as being sensitive, warm, close, friendly, supportive, intimate, nurturing, affectionate, encouraging, comforting and accepting (Allen and Daly, 2007). However, finding appropriate and acceptable ways of measuring these factors have been an issue of lengthen debates among professionals in the field of early child development and psychology (Scott and De la Hunt, 2011). This lack of consensus among researchers about what it means to be an involved father (Alio *et al.*, 2013), is still a gap yet to be filled in fatherhood research. The

concept analysis of Fathers' involvement, or support or engagement is still very blurred in literatures. The use of involvement, support, and engagement inter-changeably in literature associated with fathers' inclusion in Maternal and Child health shows concept variability.

A concept analysis to define fathers support towards breastfeeding promotion was conducted by Sherriff *et al.*, (2013) using a combination of database research and a repeated qualitative research over two phases with 16 parents of breastfed infants through seven focus group discussion and five telephone interviews. Sherriff and colleagues revealed through the analysis five essential defining characteristics (attributes) of fathers' support were: (i) knowledge about breast feeding; (ii) positive attitude to breast feeding; (iii) involvement in the decision-making process; (iv) practical support, and; (v) emotional support. Although the concept analysis was skewed towards breastfeeding promotion and fathers in the global north, further research to test its applicability in public health research associated with fathers from the global south is imperative.

In a study conducted to assess fathers' engagement in pregnancy and childbirth among British men, Redshaw and Henderson (2013) found that parity (number of children born by the woman), age, ethnicity and wealth status were key factors affecting father's reaction to and degree of involvement in pregnancy. Martin *et al.*, (2014) reported that mothers identified their husbands (fathers) and grandmothers as highly influential in the health and nutrition of their children in Western Kenya. This finding is similar to that documented by (Engebretsen *et al.*, 2010), wherein mothers in rural eastern Uganda had greater knowledge of optimal child feeding practices than fathers and grandmothers, whereas fathers had greater authority over decision-making, which limited mothers' capacity to adopt improved child care practices. Bich *et al.*, (2014) in a quasi- experimental study in rural Vietnam, using trained fathers as support for lactating mothers recorded a significant difference in the percentage of mothers breastfeeding exclusively in the intervention group as compared to mothers in the control group. In a study to assess the knowledge and beliefs of rural men in Enugu, South East Nigeria about exclusive breastfeeding Aniebue *et al.*, (2010) found that educational status and age significantly affected knowledge and acceptance of exclusive breastfeeding among the respondents.

Hence it is imperative that all household members that wield decision making powers be included in the design of child survival programmes (Cox *et al.*, 2015). In Nigeria and most parts of Africa and Asia it is culturally accepted that the roles of child care lies in the domain of mothers or female caregivers in general (Vlassoff, 2007). The design of child survival interventions are often based on behavioural theories developed in high-income countries in the global north where decisions are more likely to be made by individuals, but analysis of the social context in low and middle income countries in the global south suggests that decision making is a cooperative effort of other family members (Iliyasu *et al.*, 2010; Babirye *et al.*, 2011; Kuyper and Dewey, 2012). The gendered and social nature of parenting means that fathers, mothers and other caregivers arrive with distinct expectations, assets, constraints, and experiences which should not be homogenized or overlooked (Panter-Brick *et al.*, 2014). There is an absence of literature in Nigeria that offers insights into fathers support or involvement towards the promotion of child survival interventions. This study hopes to be among the first few that will set the course towards fatherhood research in child survival in Nigeria.

2.6 Child Survival Interventions

Child survival interventions include preventive approaches that may reduce exposure to the infection or condition or reduce likelihood of exposure that leads to disease, as well as preventive and treatment approaches that reduce the likelihood that the disease or condition will lead to death in a child (Hill, 2003). In 2003 the lancet series on child survival generated a new impetus towards reducing the number of children dying before their fifth birthday. Jones *et al.*,(2003) did an analysis of interventions that address death by cause for 42 countries with 90% of worldwide under-five deaths in 2000. The authors were able to identify essential set of interventions classified into preventive and treatment interventions with capability to reduce child morbidity and mortality at high level of implementation.

The authorsemphasised the fact that some of the most promising interventions may be delivered at the household level, with limited need for external material inputs as promotion of breastfeeding, Oral Rehydration Therapy, education on complementary

feeding, and use of insecticide-treated material. These interventions could cumulatively prevent over one-third of all deaths (Jones *et al.*,2003). The original list of 15 preventive and 8 treatment interventions as shown in Table 2.1 has been expanded further by World Health Organisation. A review by WHO identified 52 interventions for which there is “agreed upon” evidence of a “significant impact” on newborn and child survival (Bryce *et al.*,2013).

Table 2.1. Under-five deaths that could be prevented in 42 countries with 90% of worldwide child death in 2000 through the achievement of universal coverage with individual intervention Source: Jones *et al.*, (2003)

INTERVENTIONS	Number of Deaths (in 000s)	Proportion of all deaths
Prevention Interventions		
Breastfeeding	1301	13%
Insecticide-treated material	691	7%
Complementary feeding	587	6%
Zinc	459	5%
Clean delivery	411	4%
Hib vaccine(<i>Haemophilus influenzae</i> type b)	403	4%
Water/sanitation/hygiene	326	3%
Antenatal steroids	264	3%
Newborn temperature management	227	2%
Vitamin A	225	2%
Tetanus toxoid	161	2%
Nevirapine & replacement feeding	150	2%
Antibiotics for premature rupture of membrane	133	1%
Measles vaccine	103	1%
Antimalarial intermittent preventive treatment in pregnancy	22	<1%
Treatment Interventions		
Oral rehydration therapy	1477	15%
Antibiotics for sepsis	583	6%
Antibiotics for pneumonia	577	6%
Antimalarial	467	5%
Zinc	394	4%
Newborn resuscitation	359	4%
Antibiotics for dysentery	310	3%
Vitamin A	8	<1%

2.5.1 Nutrition specific interventions and sensitive programmes.

Nutrition specific interventions are interventions designed to address the immediate determinants of nutrition, which are food /nutrient intake and health. Nutrition-sensitive programmes address the underlying causes of under nutrition in their design. Hence, Nutrition-sensitive programmes draw on complementary sectors such as agriculture, health, social protection, early child development, education, and water and sanitation to affect the underlying determinants of nutrition, including poverty; food insecurity; scarcity of access to adequate care resources; and to health, water, and sanitation services. This inter-connectedness between these programmes is shown in Figure 2.12 using an adapted version of the conceptual framework for Malnutrition.

Reul *et al.*, (2013) evaluated some nutrition-sensitive programmes and how they help accelerate progress in maternal and child nutrition. Reul *et al.*, evaluated five broad programmes: agriculture, biofortification, social safety nets, early child development and schooling. In this literature review, schooling is singled out from the list of programmes examined by Reul *et al.* because of its relationship and linkage to the objectives of this study. Also it adds to earlier discussions in section 2.4.1 of this literature review.

The authors used 19 data set of NDHS collected from 1999 survey in analysing the contribution of schooling (maternal, paternal and child) in the reduction of stunting among under-five children. The result showed that the risk of stunting is significantly lower among mothers with at least some primary schooling (odds ratio [OR] 0.89, 95% CI 0.85–0.93), and even lower ($p < 0.001$) among mothers with some secondary schooling (0.75, 0.71–0.79). Paternal education at both the primary and secondary levels also reduced the risk of stunting although the respective ORs (0.96, 0.93–1.01; and 0.85, 0.81–0.89) are smaller than for maternal schooling. In addition, providing schooling for the child help to ensure better choices are made at adulthood and improved nutrition for the next generation.

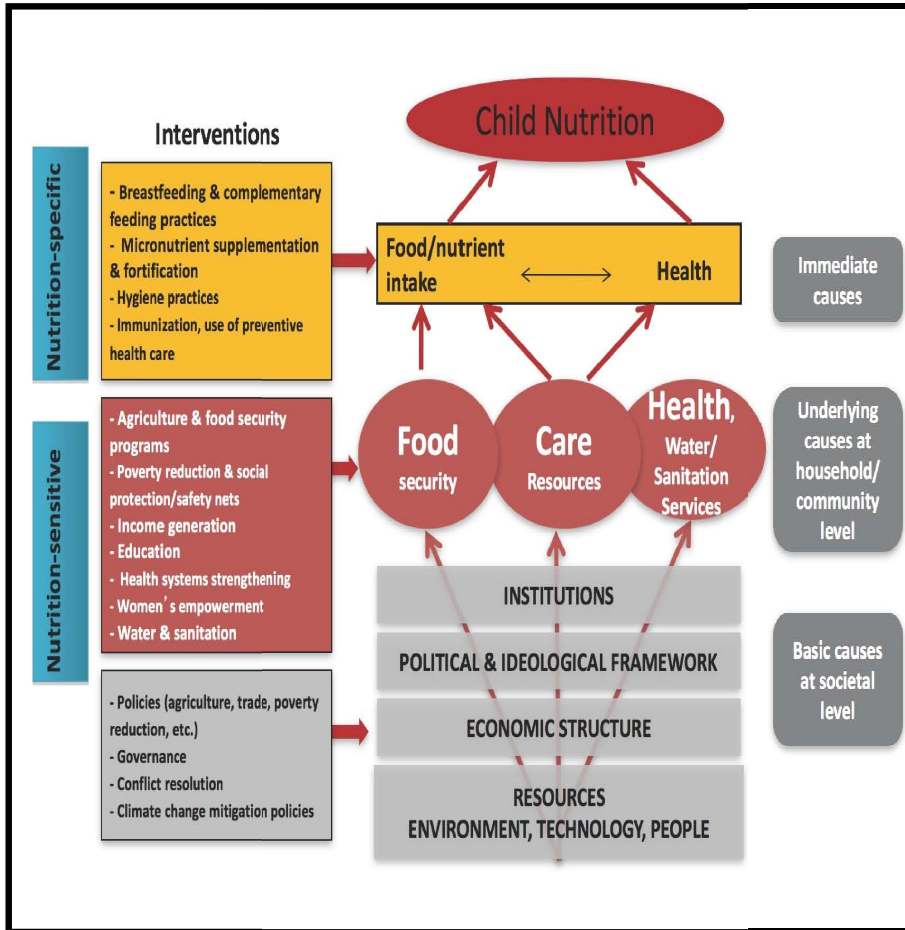


Figure 2.12 Conceptual framework showing nutrition specific and sensitive programmes integration. Source: UNICEF Nigeria, 2016

2.7 Child Survival Strategies

Child Survival Strategies are programmes, action plans/platforms or frameworks used in delivering child survival interventions to mothers and their children (Mulholland *et al.*, 2008). Some examples of these programmes are GOBIFFF, Baby Friendly Health initiative, Integrated Management of Childhood Illness, Essential Nutrition Action, Scaling Up Nutrition, The first 1000 days, Roll back Malaria Programme, and National Programme on Immunisation. The next section reviews some of the strategies that are relevant to this study's objectives.

2.7.1 Growth Monitoring, Oral rehydration, Immunisation, Food Fortification, Family Planning and Female Literacy/Education (GOBI-FFF)

In 1982, UNICEF formed GOBI from four child health interventions which were considered feasible to implement, of low cost, and with proven efficacy and which were considered to be synergistic -- growth monitoring (G), oral rehydration therapy for diarrhoea (O), the promotion of breastfeeding (B) and childhood immunisations (I). Birth spacing/family planning (F), food fortification (F) and the promotion of female literacy (F) were added subsequently (Kuhn *et al.*, 1990) to form GOBIFFF.

Growth Monitoring and Promotion

The rationale for Growth Monitoring and Promotion is very persuasive but even in the 1980s the appropriateness of Growth Monitoring Programmes was questioned largely due to its implementation (Ashworth *et al.*, 2008). There is, sadly, no general agreement in literature on what growth monitoring actually means. However clarifying the understanding is the key issue, not the terminology (Lotfi, 1988). The lack of definition is widely noticed in literatures, as researchers continue to use the two terms Growth Monitoring, and Growth Monitoring and Promotion interchangeably.

In 2007 following a technical consultation on Growth Monitoring and Promotion, UNICEF defined Growth monitoring (GM) as *'the process of following the growth rate of a child in comparison to a standard by periodic anthropometric measurements in order to assess growth adequacy and identify faltering at early stages'*, whilst Growth monitoring and promotion (GMP) *'is a prevention activity that uses growth monitoring (GM), i.e.*

measuring and interpreting growth, to facilitate communication and interaction with caregiver and to generate adequate action to promote child growth through; increased caregiver's awareness about child growth, improved caring practices and increased demand for other services, as needed (UNICEF, 2007). Despite the explicit definition and support accorded to GMP by UNICEF and WHO, divisions still exist among researchers in the field of nutrition and health on the actual benefit of GMP. Garner *et al.*,(2000)interrogated the effectiveness of GMP in the following statement... '*I will continue to question the ethics of persisting with a clinical procedure which is of unproved benefits and with a capacity to do harm*'.

A systematic review conducted by Roberfroid *et al.*,(2005) showed that there was weak evidence pointing to the effectiveness of GMP as a screening programme for malnutrition through the early detection of growth faltering. Similarly, Ashworth *et al.*,2008 in a review of the impact of Growth Monitoring and Promotion, stated that there was no clear evidence that growth monitoring is beneficial *per se*, although it was perceived to be beneficial by some of the authors whose studies were reviewed by Ashworth and colleagues. Thus Ashworth *et al.*,(2008), proposed a framework for analysing the effectiveness of GMP programmes, and also showed the connection between GM and GMP. The framework presents the flow of actions to be conducted to maximize the benefits entrenched in GM and GMP. Figure 2.13 shows the framework analysing the effectiveness of growth monitoring programmes and ORS. The authors also noted the difficulties and complexities of implementing growth monitoring and promotion as: (i) low participation rate of mothers, (ii) poor health worker performance; poor communication skills, inability to deliver messages that are actionable to mothers, and (iv) inadequacies in the health system infrastructure that constrains effective growth promotion action.

A cross sectional study carried out in Nigeria to assess the role of Primary health care workers in monitoring children's growth, showed a high level of awareness about GMP, but conversely a poor knowledge of the procedures and its interpretation by health care workers (Olugbenga-Bello and Asekun-Olarinmoye, 2011). Bilal *et al.*,(2014) undertook a qualitative study in Ethiopia to investigate how mothers and health workers practice GMP. The study found poor GMP skills amongst village CHWs to be a challenge to the

implementation of GMP; for example, in taking measurements, accurately recording them on the growth charts, and using that information to counsel mother. In general, they concluded that GMP is unlikely to succeed if mothers lack awareness of proper child-feeding practices, and if they are not supported by their husbands. Using a community based approach in improving GMP in rural communities in South Africa Faber *et al.*, (2009) showed more limitation than opportunities in reaching caregivers with timely information in managing growth faltering. This was not unconnected to the design of the project which situated Growth Monitoring weighing sites at crèches away from health facilities. Hence, from the above discussions, it is clear that the design and implementation of GMP programmes lacks global standardised guidelines.

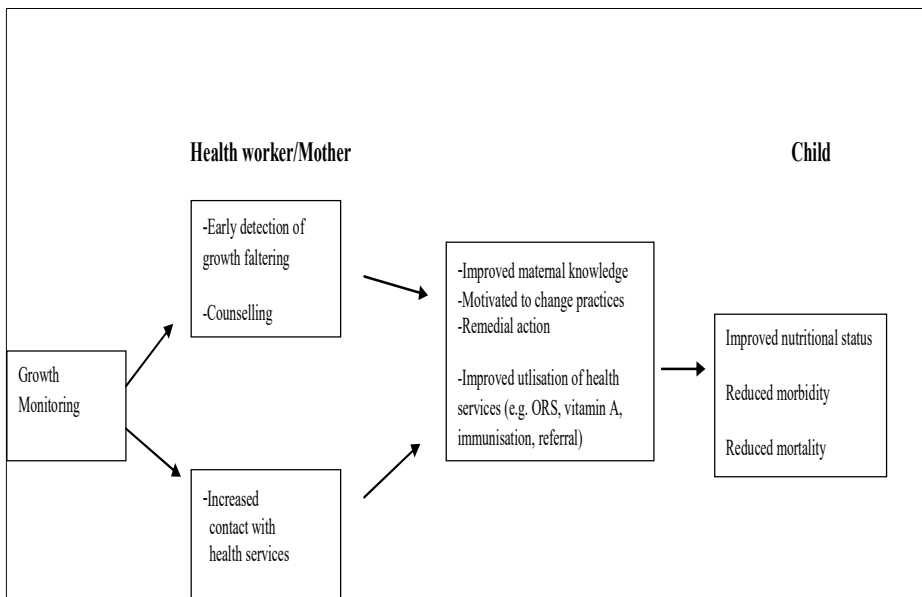


Figure 2.13 Framework for analysing the effectiveness of growth monitoring programmes, ORS. Source: Ashworth *et al.*, (2008)

2.7.2 Baby Friendly Hospital Initiative (BFHI)

The Baby-friendly Hospital Initiative (BFHI) was launched by WHO and UNICEF in 1991, following the Innocenti Declaration of 1990 (WHO and UNICEF, 2009). The initiative was formally launched in many countries thereafter. The initiative is a global effort to implement practices that protect, promote and support breastfeeding exclusively for the first six months. The BFHI is based on the Ten Steps to successful Breastfeeding program which summarize the practices needed by maternity wards to support breastfeeding.

The Ten Steps are: (i) Written Breastfeeding promotion policies, (ii) Breastfeeding training for all health personnel, (iii) Prenatal Breastfeeding promotion, (iv) Breastfeeding initiation within 30 min postpartum, (v) Breastfeeding counselling to mothers in maternity wards, (vi) Breast milk only for newborn, (vii) Rooming in, (viii) Breastfeeding on demand, (ix) No baby bottles or pacifiers, and (x) Community-based postnatal Breastfeeding support (Perez-Escamilla, 2007). The concept of BFHI is no longer limited to the Ten Steps in maternities. It has been adapted to include many possibilities for expansion into other parts of the health system, including maternal care, paediatrics, health clinics, and physicians' offices, and also into other sectors and venues such as community, commercial sector, and agricultural or educational systems. Baby-friendly care concepts, derived from the Ten Steps, can also be provided in tandem with other international initiatives, such as Community IMCI or HIV/AIDS/PMTCT programming.

Ogunlesi *et al.*, (2005) in a study to compare mothers breastfeeding practices with their exposure to BFHI in Ilesa, Southwest Nigeria, showed a statistical significant difference in breastfeeding between mothers who had exposures to BFHI and mothers who did not have exposure to BFHI. Ogunlesi and colleagues concluded that previous contact with a BFHI confers advantage in terms of appropriate Baby friendly practices. In addition they recommended the involvement of the communities in the Baby friendly Initiative as a means to enhance Baby friendly practices. Their recommendation was in tandem with the need to strengthen the weak links in the BFHI. Thus BFHI was expanded to Baby Friendly Community Initiative (BFCI), with the intent to focus on supporting mothers to breastfeed after they leave the hospital or and returned to their homes and communities (Kuo and

Lin, 2013). This attempt to make BFHI community based did not yield the much required results or acceptance. Over the years, the initiative gradually waned; an indication of inability of most countries to uphold the essence of the initiative.

Abrahams and Labbok (2009) conducted a 14 country evaluation of the contribution of BFHI to mothers' practice of exclusive breastfeeding and found that BFHI implementation was associated with average annual increases of 1.54 percentage points in the rate of EBF of infants under two months and 1.11-percentage points in the rate of EBF of infants less than six months. However, these rates were not statistically different from pre-BFHI trends. In an assessment and evaluation of the BFHI in Ghana, Aryeetey and Antwi (2013) found that none of the assessed designated BFHI adhered to the ten steps of successful breastfeeding. In addition, several factors were identified as impeding the implementation of BFHI, which were: (i) trained staff attrition, (ii) high client –staff ratios, (iii) inadequate in-service training for new staff and (iv) inadequate support for regional and national Programme monitoring.

2.7.3 Integrated Management of Childhood Illness (IMCI)

Integrated Management of Childhood Illness (IMCI) is an integrated package of case management strategies designed to lead to effective management of the common causes of child death, including pneumonia, diarrhoea, and malaria. This strategy was designed by WHO in 1991 and is now a pillar of child-survival strategies in most developing countries of the world. IMCI requires a functioning primary health-care system for effective implementation. Hence poor health systems may not be able to deliver an effective IMCI strategy. WHO guidelines specifically direct countries to implement IMCI with good health-care structures and access to referral care. The World Health Organisation (WHO) and UNICEF have also recommended the provision of integrated management of common childhood illnesses at the community level (UNICEF, 2012).

There is no literature on the assessment of IMCI in Nigeria. However, a review of its efficacy and effectiveness in Benin Republic showed that the most of the challenges impeding its effective implementation were service provider inclined (Rowe *et al.*, 2001). Some of the observed challenges were: i) incomplete assessment of children's signs and

symptoms, ii) incorrect diagnosis and treatment of potentially life threatening illnesses, iii) inappropriate prescription of dangerous sedatives, iv) missed opportunities to vaccinate, and v) failure to refer severely ill children for hospitalisation.

2.7.4 Essential Nutrition Action

WHO in 1999, in collaboration with UNICEF and BASICS, proposed effective, feasible, available and affordable interventions (WHO, 2013b). These interventions worked best when combined with interventions to reduce infections, such as water, sanitation and hygiene. Focusing on a package of essential nutrition actions (ENAs), health programmes could reduce infant and child mortality, improve physical and mental growth and development, and improve productivity. These essential actions protect, promote and support priority nutrition outcomes:

- I. exclusive breastfeeding for six months;
- II. adequate complementary feeding starting at six months with continued breastfeeding for two years;
- III. appropriate nutritional care of sick and malnourished children;
- IV. adequate intake of vitamin A for women and children;
- V. adequate intake of iron for women and children; and
- VI. adequate intake of iodine by all members of the household.

The actions proposed to obtain priority nutrition outcomes included those that health workers could implement, such as complementary feeding counselling and active feeding, growth monitoring and promotion, and supplementary feeding or food-based interventions. At the same time, health managers aiming for adequate intake of vitamin A for women and children could encourage daily intake of vitamin A-rich foods and adequate breastfeeding, give high-dose vitamin A supplements to children with infections, train staff to detect and treat clinical Vitamin A deficiency, and design a plan for preventive supplementation of vitamin A for children and postpartum women in populations at risk of Vitamin A deficiency.

Improving nutrition involves actions at health facility and population levels. At district level, these could include monitoring nutrition, identifying sub-populations at risk of

nutrition problems, updating nutrition policies and protocols, and providing resources and tools to implement nutrition activities at health facilities and at community venues. At health facilities, ENAs should be carried out at all contacts with pregnant and lactating women and their children.

2.7.5 Scaling up nutrition

Scaling Up Nutrition (SUN) is a movement which started in 2010, and founded on the principle that all people have right to food and good nutrition. The SUN movement recognises that for good nutrition to be achieved a variety of actions need to be undertaken and sustained, apart from public health interventions. Therefore SUN has proposed four strategic processes to complement public health interventions. The four strategies are: bringing people together, coherent policy and legal framework, aligning programs around a common result framework and financial tracking and resource mobilisation. These processes are expanded below:

Bringing people together: The creation of an enabling political environment, with strong in-country leadership, and a shared space (multi-stakeholder platforms) where different sectors and stakeholders align their activities and take joint responsibility for scaling up nutrition

Coherent policy and legal framework: The establishment and endorsement of policies that incorporate best practices for scaling up proven interventions, including the adoption of laws, with a specific focus on the interests and needs of women given their multiple roles within society;

Align programme around a common result framework: The alignment and effective implementation of actions around high-quality and well-costed country plans based on agreed results frameworks and mutual accountability among stakeholders

Financial tracking and resource mobilisation: The mobilisation of increased financial resources directed at the implementation of plans by multiple sectors and stakeholders in a coherent and aligned manner, and the demonstration of results (SUN, 2014)

2.7.5.1 Scaling up nutrition in Nigeria

On the 14th November 2011, Nigeria joined the SUN Movement. The Nutrition Division in the FMOH is the current convening government body responsible for scaling up nutrition. SUN's report on Nigeria 2015, shows some landmark achievements along the four strategic process.

- I. **Bringing people together**-national committee on food and nutrition convened by the National planning commission is currently in the process of being renewed and strengthened. The SUN business network is broadening to include more business partners from different sectors. A business network coordinator who liaises with the government and other networks has been appointed
- II. **Coherent policy and legal framework**- the national food and nutrition policy (NFNP) which was launched in 2002 has been updated and submitted to the Federal Executive Council for approval. Actions that help to improve food and nutrition security have been integrated into national strategic action plan (2012) for the implementation of the great green wall programme. The programme is being implemented with the support of the African Union Commission and focuses on restoration of the ecosystem to improve livelihoods. National ministerial guidelines support the mainstreaming of nutrition in sectorial policies.
- III. **Aligning programs around a common results framework**- when the updated NFNP is ready for dissemination, stakeholders will be able to further align behind the National common results framework. The current NFNP is being tracked and this will continue once it has been upgraded. There are plans to develop a system for regular tracking and reporting to multi-stakeholders platform. The availability and utilisation of capacity assessment instrument are not yet in place and capacity building for efficient monitoring and evaluation.
- IV. **Financial tracking and resource mobilisation**- National common results framework has been costed by the World Bank. The Nigerian government has recognised a need to put in place arrangement that allow for further financial assessment of the cost to scale up nutrition. Mapping of the nutrition allocations within the public budget has allowed better planning of the scale up of

interventions. The costed information is also used for advocacy with relevant members of the platform to support the required activities and interventions.

2.7.6 The first 1,000 days partnership

The United States of America (USA) and several international partners launched the 1,000 days Partnership in 2010. The Partnership was designed to raise awareness of and focus political will on nutrition during the critical 1,000 days from pregnancy to a child's second birthday (Save the Children, 2012). The objectives of the 1,000 days partnership supports and feeds into the results of the SUN Movement. The period from the start of a mother's pregnancy through her child's second birthday is a critical window when a child's brain and body are developing rapidly and good nutrition is essential to lay the foundation for a healthy and productive future. Nigeria is committed to the 1,000 days partnership. The initiative is led by the Nutrition division at the Federal Ministry of Health of Nigeria.

2.8 Reviews of community based approach towards improving child survival interventions

Slaymaker *et al.*, (2005) explained Community based approaches as 'an umbrella term for approaches to programming which involves beneficiaries in their identification, design or management. It refers to a set of approaches applied within community level projects or as part of national programme. The process through which communities plan and act together to address health problems is generally referred to as community Mobilisation (Sarhani Roy *et al.*, 2013). Antai (2011) advocated the need to use community-level interventions in health programs, because it increases maternal and child health care utilisation and improves the socio-economic positions of mothers.

Witmer *et al.*, (1995) define community health workers as community members who work almost exclusively in community settings and who serve as connectors between health care consumers and providers to promote health among groups that have traditionally lacked access to adequate care. Also, WHO 1989 study group defined Community health workers (CHW) as "*members of the communities where they work, who should be selected*

by the communities, answerable to the communities for their activities, supported by the health system but not necessarily a part of its organisation, and have shorter training than professional workers”. Walt (1989) provided the following definition of CHWs: generally local inhabitants given a limited amount of training to provide specific basic health and nutrition services to the mothers of their surrounding communities. They are expected to remain in their home, village or neighbourhood and usually work as part-time health workers. They may come as volunteers or receive a salary. They are generally not, civil servants or professional employees of Ministry of Health.

The use of CHWs in the provision of health care information, education and services has been identified as one of the strategies in addressing the growing shortage of health staff in sub-Saharan Africa, especially in the rural areas le Roux *et al.*,(2011) as they promote health care, increase health seeking behaviour, improve hygiene and sanitation, thus channelling resources and time of doctors and nurses into monitoring and treating diseases (Balcazar and de Heer2015; Cataldo *et al.*,2015). Furthermore the active involvement and empowerment of communities through community health workers may have positive effects on children’s health, through influencing behaviours and changing health beliefs and leading to improved access to health services Hanies *et al.*,(2007).

Peer education is a learning process made easy by active doing, guidance and motivation. The approach utilises a peer educator trained as a facilitator to encourage learning by doing, in a participatory way to enhance community mobilisation and participation (Abatt 1992). The use of Peer education is to convey specific information, awareness or behaviours by individuals to members of a peer or target group. Peer educators must share common key characteristics with those being targeted, but may either come from inside or outside its group (Steinmann, 2010), this marks the distinction between peer educators and community health workers. The most commonly reported use of peer facilitators is to increase the uptake of health promotion messages (Duncanson *et al.*,2014), although the increase in health service uptake and improvement of the nutritional status of under-five children has also been achieved using the peer education approach (le Roux *et al.*, 2011; Duncanson *et al.*, 2014). Literatures abound in support of using Community members either as volunteers, facilitators, health workers, andpeer educators in improving health of

community people (Morrow *et al.*, 1999; Haider *et al.*, 2000; Kidane and Morrow 2000; Johnson *et al.*, 2000; Bhandari *et al.*, 2003; Kane *et al.*, 2010; Shi *et al.*, 2010; Gilmore and McAuliffe 2013; Balcazar and de Heer 2015).

In the poor district of Lasbela in Pakistan, Anderson *et al.*, (2009) used trained community people; females and males in increasing childhood vaccination uptake through initiating evidence-based discussions on the cost and benefits of childhood vaccination among households in the intervention groups. A 12 month follow up showed a higher number of children ages between 12 and 23 months vaccinated in the intervention group than in the control group. In a similar study, Shi *et al.*, (2010) designed an educational intervention delivered by local health-care providers in rural communities in China, aimed at improving complementary feeding practices and child nutrition. It was found that food diversity, meal frequency and hygiene practices were improved in the intervention group. Infants in the intervention group gained 0.22 kg more weight and gained 0.66 cm more length than did controls over the 12 months intervention period.

Fayemi *et al.*, (2011) utilised 250 community members; 200 females and 50 males as trained health volunteers across 10 local government areas in five states in Nigeria, to provide information, education and increase contraceptive uptake, build referral linkages for pregnant women in the communities to the health centres and strengthen the demand side of the health service provision. Likewise, Flax *et al.*, (2014) designed a breastfeeding promotion plus group counselling which was integrated into women's microcredit program in Northern Nigeria. The study was with the intent of using the monthly microcredit meeting as an opportunity to discuss the benefits of early breastfeeding initiation and exclusive breastfeeding to pregnant women in the group. Six months after child birth, higher numbers of mothers were breastfeeding exclusive compared to the control group in the study that had no learning sessions on infant breastfeeding practices. However there are studies in literatures that challenge the effectiveness, efficiency and sustainability of using community volunteerism and peer support educators as an approach in health developmental studies. MacArthur *et al.*, (2009), and Cataldo *et al.*, (2015) acknowledged in their respective studies the ineffectiveness of using this approach.

MacArthur *et al.*,(2009) conducted a study to assess the effectiveness of an antenatal clinic-based peer support worker service on breastfeeding initiation in two clustered randomised groups of pregnant women due for delivery, and living in the United Kingdom. Result showed that initiation rates for breast feeding did not differ between intervention and control groups; 69.0% and 68.1%. The authors concluded that the use of antenatal clinic based, peer support worker service for initiation of breast feeding was ineffective in increasing initiation rates. MacArthur *et al.* study methodology was not robust enough. Their methodology did not take the following into consideration: (i) they overlooked the possible negative consequence of having a mixed group sample of mothers from different ethnic groups from the global north and south, and (ii) were not able to pair mothers with peer support workers of the same ethnicity, or who shared similar socio-cultural identities. Thus the argument presented by MacArthur on the ineffectiveness of peer education is unfounded.

Similar, Cataldo *et al.*,(2015) reviewed the effectiveness of community volunteers in the provision of home base care for people living with AIDS in Zambia, using a qualitative approach. They argued that in the absence of donor funding to support incentives to volunteers that volunteers had grown weary of their communal support, and wished deep down in their heart that they were given incentives or included into the formal stream of health workers. However, the volunteers as noted by the authors were torn between volunteerism and altruism that prevail in public health and their heart desires. The use of a qualitative approach is commendable in this study by Cataldo and colleagues in revealing information which is difficult to gather using quantitative approaches. One main problem associated with HIV programming in Africa has been donors funding approach of top-bottom without putting into account the following: (i) the already existing social interconnectedness of African communities and household, (ii) weak health systems in Africa, (iii) high unemployment rates and (iv) poverty rates.

2.9 Status of primary health care in Nigeria

Nigeria operates a decentralized health system run by the Federal Ministry of Health (FMOH), State Ministry of Health (SMOH), and Local Government Health Department

(FMOH, 2007b). The FMOH is the overall health policy formulating body. It coordinates and supervises the activities of the other health levels. In addition, it provides tertiary care through teaching hospitals and federal medical centres (Oлакunde, 2012). The SMOH provide secondary care through the state hospitals and comprehensive health centres while Local Government Health Department provides primary health care (PHC) services through the primary health centres. The financing of the Primary health care is tied to funding flows from federation account which is shared between levels of government according to an allocation formula; Federal 56%, States 26% and LGA 16% (NPHCDA, 2010).

The Primary Health Care level of health services was based in line with the Alma Ata Declaration of 1978, and is defined as *essential health care based on practical, scientifically sound and socially acceptable methods and technology made universally accessible at an affordable rate* (Hill, 2003). This level of health care emphasises the need for community and individual participation in primary health care (Ashworth *et al.*, 2008). Also the structure of the Primary health is designed to be an integrated approach that operates in consonance with other line ministries and identifies windows of opportunities in several health programmes (NPHCDA, 2010).

The Nigerian Health Policy declares the Primary Health care as the key to attaining the goal of health for all people of Nigeria and sets targets for infant mortality reduction, maternal mortality reduction, reversal of the HIV/AIDS trends and control of malaria and other major diseases (FMOH, 2005). Primary Health Care in Nigeria is provided by the local government authority through health centres and health posts and they are staffed by nurses, midwives, community health officers, health technicians, community health extension workers and physicians (doctors) especially in the southern part of the country (Abdulraheem *et al.*, 2012); although this is contrary in many other health facilities (Fayemi *et al.*, 2011).

There are 10 components of Primary Health Care. They include: (i) Education concerning prevailing health problems and the methods of preventing and controlling them; (ii) Promotion of food supply and proper nutrition; (iii) Adequate supply of safe water and

basic sanitation; iv. Maternal and child health care including family planning; (v) Immunisation against the major infectious diseases; (vi) Prevention and control of locally endemic diseases; (vii) Appropriate treatment of common diseases and inquiries; (viii) Provision of essential drugs; (ix) Community mental health care; and (x) Dental Health (FMOH, 2007)

The Nigerian government between 1975 and 1983 introduced the Basic health service implementation scheme, with the primary intent to augment the delivery of health services to the rural parts of Nigeria through the training of non-physician staff (Dungy, 1979). Three cadres of non-physician staff were to be trained in the scheme in a concentrated workshop varying between two and six weeks in selected rural areas; Community Health Aide, Community Health Assistant and Community Health Officers (Dungy, 1979). In a review of the Basic health service implementation scheme Asuzu (2004) *referred to it as an ambitious attempt by the government to bring about reforms in the health care sector and that it was far too heavy in infrastructure and auxiliary health manpower development*, a reflection that health governance and accountability is a rare discourse in Nigeria.

A study to assess the PHC service delivery in four states in Nigeria, Dolea (2009), found that most PHCs were primarily manned by Community Health workers, comprising of Community Health officers (CHOs), Community Health Extension Workers (CHEWs) and Junior Health Extension Workers (JHEW), and that PHCs located in rural areas were often understaffed. If the PHCs in the rural area are understaffed, how would information and support for utilisation of child survival interventions reach mothers?

Bryce *et al.*, (2003) argued that poor coverage of child survival interventions is as the result of weaknesses both in the provision of and demand for services, and is a consequence of malfunctioning health systems. In an assessment of the effect of comprehensive health systems in an improvised setting, Perry *et al.*, (2007) argued that disease-specific approach has hitherto been successful in reducing the number of under-five deaths globally. Although, this approach was successful in the short term, but an integrated approach was the required long-term answer in addressing child deaths. Perry

and colleagues warned that overreliance on a disease-specific approach may stall progress in further reducing under-five mortality in an improvised health system. However, Atun *et al.*, (2008) insisted that it requires a strong health system to achieve substantial gains in child survival programmes using the integrated approach, and that it was only when the health system is strong, can vertical programmes or disease-specific approaches be done away with it. This discourse illustrates the current state of the Nigerian primary health care, as the next section of this chapter attempts to review strategies adopted by the Nigerian government in the bid to strengthen the primary health and increase health service providers in rural and hard-to reach locations is assayed.

2.9.1 The Midwives Service Scheme (MSS)

The Midwives Service Scheme (MSS) was established under the 2009 Appropriation Act of the Federal Republic of Nigeria. The scheme is being implemented by the National Primary Health Care Development Agency (NPHCDA). The scheme seeks to mobilize unemployed and retired midwives for deployment to selected PHCs facilities in rural communities in order to facilitate increase in skilled attendance at birth and the reduction of maternal, newborn and child mortality in Nigeria (NPHCDA, 2010). The scheme has seven core objectives of which one is to reduce maternal, newborn and child mortality by 60% in the MSS target area by 2015 (NPHCDA, 2010).

The Midwives Service Scheme (MSS) is based on a cluster model or hub and spoke arrangement; (Abimbola *et al.*, 2012). Health facilities selected for the MSS are linked in an effective two-way referral system in which four selected primary health care facilities with capacity to provide Basic Essential Obstetric Care are clustered around a General Hospital with capacity to provide Comprehensive Emergency Obstetric Care (CEOC) serving as a referral facility. There are 815 participating health facilities (652 PHC facilities and 163 general hospitals). Each PHC facility has four midwives to ensure 24-hour provision of skilled birth attendance at all times, as well as other maternal and child health services.

2.9.2 MSS geographical distribution/locations

The number of facilities in each of the six geopolitical zones was selected on the basis of rural communities with the highest maternal and child mortality burden. Nigeria was divided into three zones according to Maternal Mortality Rate (MMR)(i)very high MMR (NE and NW),(ii) high MMR (North Central [NC] and South South [SS]), and (iii)moderate MMR (SE and SW). NE and NW have six clusters per state, SS and NC have four clusters per state, and SW and SE have three clusters per state. The project currently serves an estimated aggregate of 15 million people in Nigeria (Abimbola *et al.*,2012).

In pursuance of this objective, Midwives were tasked with the following;

1. Ensuring that all pregnant women are identified and have access to antenatal services
2. Conducting health education on the importance of ante-natal care and on the danger signs of pregnancy
3. Provision of pre-pregnancy advice and health, including nutrition education
4. Providing family Planning information and services
5. Assisting women to successfully initiate breastfeeding within 30 minutes of delivery and to continue to sustain breastfeeding
6. Ensures that mothers come for postnatal visit
7. Carrying out growth monitoring and promotion of children's health in the community
8. Promotion of infant and child health including participation in the NPI and management of childhood malaria
9. Working with team members to ensure appropriate link between clinic staff and community based service providers

The implementation of the scheme has not been without challenges; Abimbola *et al* (2012) and Adogu (2014) in independent studies reviewed the impact and challenges of the scheme since its commencement. Some of the challenges identified were: (i)funding for the sustainability of the strategy, as the scheme was set up with funds from the debt relief granted Nigeria by the Paris Club, (ii) state and local government not honouring the signed Memorandum of Understanding(MoU) with its associated responsibilities, (iii) low availability of qualified midwives and difficulty in retaining the employed midwives,

(iv) language barriers between midwives and community people, (v) need for training and re-training of the midwives.

In an assessment to investigate the perception, willingness and acceptance of the MSS amongst nursing and midwifery students in Oyo State, South West of Nigeria, Adewole *et al.*, (2014) observed that only 33.8% of the 361 interviewed students were knowledgeable about the scheme. The most revealing information is the fact that only 27.4% were willing to participate in the scheme, and willingness to participate was associated with being in the midwifery course and being older than 25 years. Hence if the required professionals to implement the MSS are not willing to be employed by the scheme, how does the government hope to stem the tide of maternal and child mortality in the rural areas under the MSS? In addition, if the MSS has been faced by challenges, especially funding, why did the federal government set up the SURE-P MCH in 2012?

The Subsidy Reinvestment and Empowerment Programme (SURE-P) was set up to efficiently manage financial resources accruable from fuel subsidy removal effective from January 2012. The programme is a combination of designed interventions to cushion the effect of subsidy removal mostly on the vulnerable population in Nigeria. The programmes include Maternal and Child Health (MCH), public works, employment schemes, mass transit programmes, vocational training, and skill acquisition schemes.

The SURE-P MCH project is designed to focus on rural areas and underserved communities across the country. It is currently active in 500 Primary Health Care Centres (PHCs) spanning more than 600 LGAs spread across the six geo – political zones in Nigeria (USAID, 2014). The project works through demand and supply side lines geared towards reducing maternal and child mortality in Nigeria. The supply component involves increasing both infrastructure and human resources to improve health service delivery while the demand component serves to increase the utilisation of health services in the health facilities through the use of incentives like Conditional cash transfers (Okoli *et al.*, 2014). In fulfilling its objectives, the SURE-P MCH Project will:

- I. Recruit, train and deploy 2,000 Midwives and 1,000 Community Health Workers (CHWs) throughout the Federation with reference to high risk areas;

- II. Recruit and train 3,000 village health workers (VHWs);
- III. Initiate capacity building of 12,000 CHWs already employed outside of Midwives Service Scheme (MSS) and the SURE MCH facilities;
- IV. Provide conditional cash transfers (CCTs) to pregnant women and community health resource persons (CORPs);
- V. Activate/orient ward development committees (WDCs);
- VI. Carry out infrastructure upgrades at selected PHC facilities and referral general hospitals and
- VII. Conduct outreach projects

The justification by the federal government to set up SURE-P MCH is unclear and naïve in the light of the ongoing project as the MSS. The business case upon which SURE-P MCH is predicated is based on the fact that the MSS lacked a demand creation component in its design. Is this enough reason to create parallel strategies within the same health system?

CHAPTER THREE

METHODOLOGY

3.0 Study design

This study was quasi-experimental in design. The choice of design was due to the nature of the intervention for this study. The approach of randomly selecting individuals to be assigned to the intervention was not practicable, knowing the efficacy of CSIs. The only practical and ethical alternative was allocation of intervention to different but closely comparable communities.

The study design consisted of a non-randomised Pretest-Posttest control and intervention groups. Three study groups were used; Experimental group (group receiving the intervention of mother peer educators), Midwives Service Scheme group (group similar to the Experimental group, but has trained midwives rather than mother peer educators) and Control group (group having no ongoing intervention)

3.1 Study location

The study was carried out in Akinyele and Ido Local Government Areas (LGA) of Oyo state, South West Nigeria. Oyo State is situated on latitude 7° 00' north and longitude 3° 35' east. The state's capital is Ibadan which was the seat of power of the former western region of Nigeria. Oyo state has 3 senatorial districts: Oyo North, Oyo Central and Oyo South, and 33 LGAs. Each LGA is divided into wards. Oyo State is homogenous, mainly inhabited by the Yoruba ethnic group who are primarily agrarian. Oyo State was purposively selected for the study because it records the second highest rate of undernutrition among under-five children (17.1%) in South West Nigeria (NPC and ICF Macro, 2009)

Akinyele LGA is zoned under Oyo Central senatorial district. The LGA occupies a land area of 464.892 square kilometres and a total population of 211,811 (NPC, 2006). The

population density is 516 persons per square kilometre. Akinyele LGA is sub-divided into 12 wards. The LGA has received a number of support from health promotion programmes implemented both by the government and development organisations. Historically the LGA was the first documented LGA where the Community Based Distribution (CBD) approach to contraceptive use was piloted by Ladipo *et al.*, (1986). Also the LGA is one of the LGA benefiting from the Midwives Service Scheme (MSS) implemented by the National Primary Health Care Development Agency.

Ido LGA is in Oyo South senatorial district. The LGA has an area of 986 square kilometres and a population of 103,261 (NPC, 2006). The population density is 105 persons per square kilometre. Ido LGA is sub-divided into 10 wards. The LGA has large hectares of grassland suitable for animal rearing, vast forest reserve and rivers. Some of the industries located in the LGA are Nigerian Wire and Cable Ltd, Nigerian Mining Corporation and the Nigerian National Petroleum Company (NNPC) depot. The LGA does not benefit from the government's Midwives Service Scheme Programme.

The population in both Akinyele and Ido LGA are mainly rural. The people are majorly small scale farmers, petty traders, artisans and government workers. The study duration was 18 months following due approval of the research protocol by the ethics committees of the University of Ibadan/University College Hospital and the Oyo State Ministry of Health.

3.2 Study population

The study population was primarily households with mother-child pair with children less than 36 months of age in the selected rural communities. The ***Inclusion criteria*** for the study were as follows: participants must be the biological mother of the child, the child to be involved in the study must be less than 36 months of age at the time of inclusion into the study, mother and child pair must have been living in the communities for at least 12 months prior to the start of the study, and mothers willing to participate in the study as indicated through their informed consent. ***Exclusion criteria*** are: mother-child pair who presented as being sick, mother and child pair not resident in the community (on transit or visiting), or have not stayed a minimum of 12 months in the communities, and mothers not willing to participate in the study.

3.3 Sampling approach

Akinyele and Ido LGAs were selected purposively being at two extremes of the city of Ibadan. A ward is the smallest administrative and development unit in Nigeria, according to the National Planning Commission. A ward in Nigeria is made up of a cluster of villages. Each ward takes on the name of one of the villages. In this study, the term communities will be used rather than villages.

The wards in Akinyele and Ido LGAs were purposively selected based on established definition of a rural area by the National Population Commission of a population of less than 20,000 people. The 2006 Population Census did not provide community level population size, however the 1991 Population Census provided community level population. Thus population sizes of the communities in 2011 were calculated based on growth rate projections from 1991 Population Census.

The following set criteria were used in selecting the study communities; (i) at least 10km from the LGA headquarter, (ii) agrarian, (iii) no ongoing nutritional programme, (iv) presence of a primary health care center and a primary school, (v) absence of a secondary school or share a secondary school, and willingness to participate in the study. Three of the set criteria were considered very crucial; at least 10km distance from the LGA headquarter presence of a primary health care center, and willingness to participate in the study.

A total of nine communities; five in Akinyele and four in Ido LGAs were selected for the study. The communities were judged to best satisfy the above criteria for selection. The nine communities selected were: (i) Akufo, Akinware, Ilaju, and Ago-Ayo in Ido, and (ii) Ikereku, Iroko, Alabata, Ijaye-Ojutaye, Olanla in Akinyele. The four communities in Ido LGA were assigned to Experimental group (EG), while three and two communities in Akinyele LGA were assigned to Midwives Service Scheme group (MSSG) and Control group (CG), respectively. Figure 3.1 shows the sampling approach in a flow chart developed for this study. In this study, a household was defined as a group of people eating from the same cooking pot and sleeping under the same roof, with a definite household head. In the nine study communities, only households having a child below 3 years were enlisted into the study.

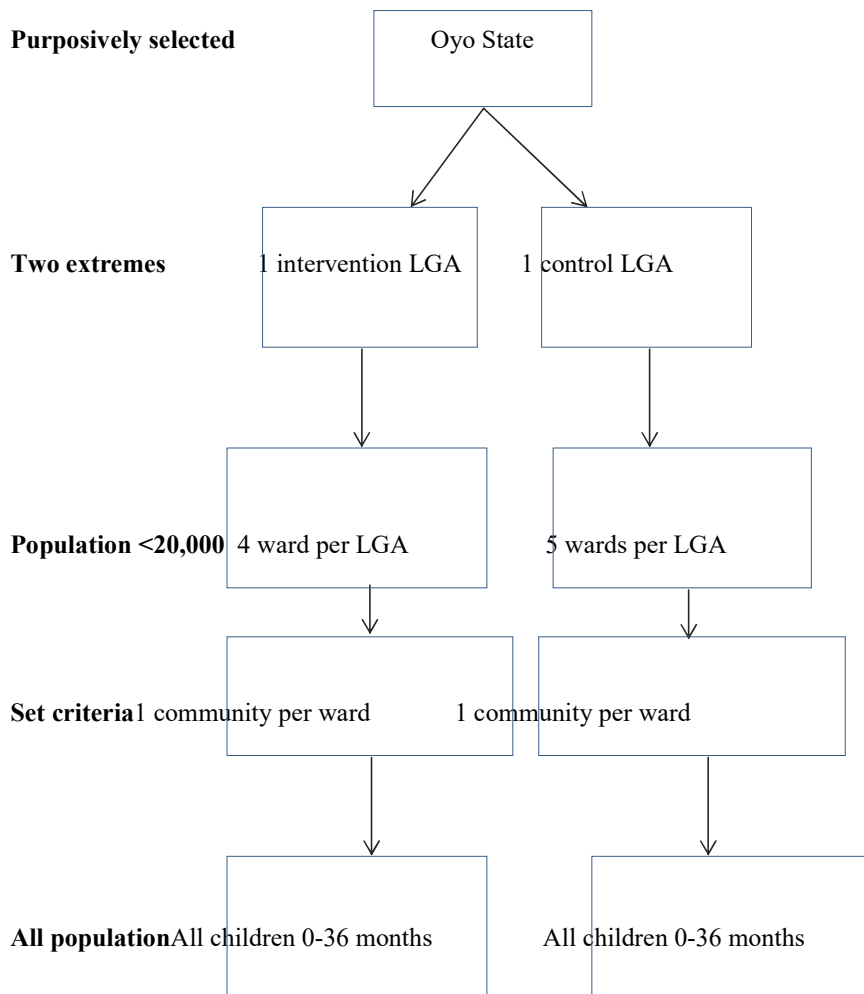


Figure 3.1 Sampling approach. Source- Developed for this study

3.4 Sample size determination

The Nigeria Demographic and Health Survey 2009 indicated the prevalence of wasting among under-five children in Oyo state as 11.7%. The minimum sample size required is calculated on the assumption that this intervention will improve the utilisation of child survival interventions in households of mothers with under-five children by 10%. The number of mother and child pair included in the intervention and control groups was given by the formula

$$n = \frac{(Z_{\alpha} + Z_{1-\beta})^2 (p_1 (1 - p_1) + p_2 (1 - p_2))}{(p_1 - p_2)^2}$$

Where Z_{α} = standard normal deviate corresponding to 5% level of significance = 1.96

$Z_{1-\beta}$ = standard normal deviate corresponding to a power of 80% = 0.84

p_1 = prevalence of wasting in the experimental group = 11.7+10% =21.7%

p_2 = prevalence of wasting in the control group = 11.7%

n = minimum sample size in a group

This gives a minimum of 212 in each group. However to allow for a loss to follow up rate of 10%, the sample was increased to 233 per group. It is noteworthy that the rate of prevalence of wasting reported by the NDHS 2009 was calculated based on a sample size of children less than 60 months old and not on a sample size of children less than 36 months.

3.5 Characteristics of the communities selected

Experimental group(EG)

The experimental group is made up of four communities: Akufo, Akinware, Ilaju and Ago Ayo. The communities are close enough to one another and a visit to all is possible in a single day. The total population in Akufo was 2218; Akinware- 519; Ilaju- 776; and Ago Ayo-160. The buildings of the health centres in Akinware and Akufo had been renovated with funding from MDGs project of the Federal government. The primary health center in Ilaju served the residents in Ilaju and Ago Ayo. The health center is an old *garrri* processing industry, which has been partly converted to a PHC. In Akinware and Akufo, the PHC is within a 10 minutes working distance. However, the walking distance from Ago Ayo to the PHC in Ilaju is about 30 minutes. Only Akufo had electric power supply at the time of assessment. In all, Akufo was the only community with a secondary school and a primary school in the group; the three other communities each had a primary school.

Midwives Service Scheme group(MSSG)

The Midwives Service Scheme group is comprised of Iroko, Alabata, and Ikereku communities. All the three communities are located along tarmac roads leading to adjoining communities, and are 30 minutes' drive apart. The total population in Iroko was 2079; 1516 in Ikereku; and 1022 in Alabata. The three communities enjoy well equipped and spacious health care centres. The communities benefit from MSS programme implemented by the government. A community development association (CDA) was set up in each of the three communities following the inception of the MSS programme. The MSS programme was in the 18th month of implementation at the commencement of this study. Overall, the PHCs are within a walking distance of 15 minutes from the households. All three communities had electric power connections and enjoyed a level of electric power supply. All three communities have a primary school.

Control group (CG)

The control group is made up of two communities; Ijaye-Ojutaye and Olanla. The two communities are located along tarmac roads leading to adjoining communities, are 30 minutes' drive apart. The total population in Ijaye-Ojutaye was 443 and Olanla-1052. Each community had a health center that serves the population. The two communities had electric power connections and enjoyed a level of electric power supply, and have primary schools.

The road access to the communities was good, although roads within the communities were mud/dirt roads. The communities' population are primarily agrarian; small scale farmers farming mostly below 2 hectares of land. Crops grown were maize, vegetables, bananas, cassava, yam, maize, pepper, tomatoes and *ewedu* (*Corchorous Olitorius*). The population in the three groups are predominantly from the Yoruba tribe, and the local language widely spoken across the communities and in households. The dwelling characteristics were similar in the three groups. Houses were built with either cement blocks or mud, and roofed with corrugated iron sheets or straw. Without exceptions, chickens and goats roamed through the kitchen and dwellings of households. A summation of all of the evidence indicated that despite some minor differences and discrepancies, the three groups were as nearly equivalent

and comparable as possible. The population of the nine communities were based on 1991 population growth projections, and study was conducted in 2011. The maps showing the study sites are provided as Appendices VII and VIII.

3.6 Study intervention

3.6.1 Preliminary investigations

Following the selection of the study communities, introductory visits were made to the study communities. Meetings were held with the community leaders to familiarise them with the study, gain their support and acceptance. Also visits were made to Akinyele and Ido area councils, where introductory meetings were held with the supervisory counsellors for health in both LGAs, and the Chairman of Ido LGA.

3.6.2 Baseline survey

(a) Quantitative data

A baseline survey was carried out to establish similar characteristics across the nine communities and benchmark information. A semi-structure questionnaire was adapted from the Propan tool (PAHO, 2004), NDHS household questionnaire (NPC and ICF Macro, 2009) and baseline tools of the Midwives Service Scheme (NPHCDA, 2010). The 85 item questionnaire covered questions which included demography, mother's knowledge and practice of child survival interventions; breastfeeding, exclusive breastfeeding, immunisation, cause and treatment of diarrhoea, utilisation of health services, health communication, father participation in child care and health, assessment of household water & sanitary conditions. The tool was translated into local language for easy comprehension of the questions, and communicated back into English language to check for accuracy.

Six Research assistants (3 males and 3 females) who were graduates of tertiary institutions from various social science disciplines, who were from the Yoruba tribe and could speak the language were identified and trained for 18 hours over three days. The purpose of the training was to provide the research assistants with a comprehensive understanding of the project overview, study objectives, techniques of interviewing, field procedures, explanation of all the sections of the questionnaire, and how to administer the questionnaires. In addition, they were also trained on how to

measure mother child pair's weight and height. The questionnaire is provided as Appendix IV.

(b) Qualitative data

The frequently used method for information collection is the questionnaire which is quantitative data. Focus group discussion (FDG) is one of the methods used in qualitative data collection. One of the purposes of conducting focus group discussions (FDG) is to understand the result of a quantitative study; to explain data from quantitative method especially when there is an unexpected finding (Araoye, 2003). FDGs were conducted with mothers' of under-five children in the study communities, to complement information gathered through administered questionnaires. In addition, one of the objectives of this study was to determine the level of fathers' involvement in mothers' use of CSIs. Nigerian communities are patriarchal; having FDGs with fathers seemed socio-culturally acceptable in rural communities, than administering questionnaires. Therefore FDGs were held with fathers of under-five children in the study communities.

3.6.3 Data collection at baseline survey

(a) Questionnaire administration

In all the selected nine communities, mothers with children less than 36 months living with a definite household head became the unit study. Trained research assistant administered questionnaire obtaining information from the child's mother. Mothers provided information on their households, children and husbands.

(b) Focused-group discussion (FGD)

A total of 18 focus FDGs were held in the 9 study communities. In each community two focus group discussions were held; one with mothers and one with fathers separately. The discussants were purposively selected based on set criteria. The mothers who were discussants in the FGD were mothers who had a child less than five years old; mothers absent during the administration of the quantitative questionnaire; married and living with husbands in the study community; and within the reproductive age of 15-49 years. The FDGs took place on week days after close of school, to enable mothers who were teachers to be part of the discussion. The discussions were held in school classrooms.

The characteristic of fathers' FGD discussants were married men living with their wives, have a child less than five years old, and working within the community. The FGDs took place on Sundays. This day was chosen by community leaders, as the most convenient time to meet with fathers across the nine communities. Discussions took place away from home, and distractions. The venues used were an abandoned customary court, school class room or under an open shade. The fathers were comfortable and happy to use these premises. Each group consisted of between 7 and 12 persons, with discussions lasting between 45 to 60 minutes. The discussions were recorded using an audio recorder with the permission of the discussants. In addition, short notes were written of the key points of the discussions. The mothers and fathers FGD guide are provided as Appendix V.

(c) Anthropometric measurement

The weight of mother and child pair was measured using weight measuring scale (Hanson scale, model H89 with European Article Number (EAN):5099838000448). Children's weight was measured with children dressed lightly and without shoes. Infants 0-24 months were measured lying down in a supine position using a Length-board and children > 24 months were measured while standing. Ages of children were verified on presentation of immunisation card or birth certificates. Where there were no documents to certify the date of birth, ages were estimated based on past events or reminiscences among mothers who gave birth within the same year. Mother's height was measured to the nearest cm using fabricated stadiometer.

(d) Validation of instrument

The questionnaire was pre-tested in a similar socio-cultural community as the study communities for validation; gaps, weakness, accuracy, and appropriateness. Pre-test questionnaires were subjected to test of internal consistency using Statistical Package for Social Sciences (SPSS) version 17.0 Cronbach's Alpha (α) test, and the internal consistency result was $\alpha = 0.804$. The data collection took place over a period of eight weeks from May to June 2011.

3.6.4 Data analysis of baseline survey

(a) Questionnaires

A total of 464 questionnaires were administered in the nine communities. All questionnaires were reviewed and quality checked for completeness. Thirteen questionnaires had either being administer to mothers with children older than 36 months, or mothers provided incomplete information. These 13 questionnaires were dropped from further analysis. The remaining 451 questionnaires were subjected to data processing; cleaning, editing, development of a coding book and coding of the open ended questions. The coded variables were entered into SPSS version 17.0

(b) FGDs

There is no agreed approach towards analysing qualitative data. Hence, this study utilised the approach suggested by Ryan (2006) and Burnardi *et al.*, (2008). The recorded FGDs on audio tapes were transcribed verbatim, written out with long hand and typed electronically using Microsoft office Word 2007. The typed transcripts were reviewed, organised, coded based on both research and emerging themes and categorised into coding frameworks. The coding frameworks were interpreted and used in writing the discussions.

(c) Anthropometric measurement

Children's anthropometric measures; weight, length/height and age were entered and analysed with WHO Anthro 2006 software version 3.1 to generate the nutritional indices; weight-for-length/height, length/height-for-age, weight-for-age. These nutritional indices were classified based on their Z-scores (<-3SDs (severe form); -3 to <-2SDs (moderate form); -2 to -1SDs (mild form) and >-1SD (normal). Mothers' weights and heights were entered into SPSS version 17.0.

(d) Data management and analysis

Questions capturing mothers' knowledge and practice of child survival interventions were assigned score of 0 if mother provided a wrong answer and a score of either 1 or 2 depending on the category of question if mothers' response was right. This was used to generate an 8 point knowledge scale, a 17-point practice scale. The knowledge level of respondents was categorised into three levels; poor (0-3), fair (4-6) and good (7-8). Also, the practice level was categorised into poor (0-5), fair (6-11) and good (12-17).

Data were analysed using Descriptive and Inferential analyses; frequency distributions, Chi-Square, Analysis of Variance (ANOVA), statistical significance at 95% confidence level were used where applicable. Factors that were found to be significant at $p < 0.05$ from bivariate analysis were entered into the logistic regression model.

3.7 Intervention

3.7.1 Training of primary health service providers in the experimental communities

Six health service providers in the experimental communities were trained for 12 hours spread across three days; four hours per day. Three of the six health service providers were qualified nurses, and had a current designation of Senior Nursing Sister (SNS). They were the head of their respective health centres. The others three were Community Health Extension Workers (CHEWs). Each CHEW supported the SNS in their respective health centres. None of the health service providers had attended any formal training in nutrition.

The objectives of the training were; (a) to share with the health service providers the purpose and objectives of this study, (b) to assess the level of knowledge of the health providers on child survival interventions, and (c) to encourage them to work with the peer educators to increase the community's utilisation of health facilities. The topics discussed during the training were (i) introduction to child survival, (ii) breastfeeding, (iii) exclusive breastfeeding, (iv) immunisation (v) growth monitoring and promotion, (vi) counselling, and (vii) record keeping. A pretest was conducted before the commencement of the training, to ascertain the level of knowledge of the service providers on basic child survival interventions.

3.7.2 Selection of mother peer educators

Akufo community

The head of a small community in Yorubaland is popularly referred to as *Baalé*. I discussed with the *Baalé* of Akufo the need to select mothers to be trained as peer educators. The *Baalé* requested for the presence of the women leader of the community and other traditional leaders in the community to his palace. He asked me to introduce the purpose of the study and the need to have mother peer educators. After my presentation, the *Baalé* asked that I should excuse his council so they deliberate.

The *Baalé* responded that the council believes that intelligence is not only what will be required to be a peer educator. He stated the need to have the attribute of being proactive and well-coordinated. I shared the selection criteria for the peer educators with the *Baalé*. The criteria were: having some level of literacy (formal or non-formal education), previous experience of having cared for an under-five child, resident in the community, able to speak the local language, and show the willingness to work as volunteers. The *Baalé* and his council chiefs called out some names, and the women leader was asked to assemble the nominated women to meet with me in the community health centre.

Akinware community

The *Baalé* of Akinware was excited about the study and welcomed it at the first introduction. He requested that the wife of the Clergy in the village be invited to be part of the meeting with the other chiefs. The *Baalé* was of the opinion that since the wife of the clergy has been actively involved in providing support and counsel to women in the community I should engage with her on the process of selection of the mother peer educators. The clergy's wife assisted in identifying some women who were introduced to the *Baalé* and his chiefs. The *Baalé* encouraged the women to be active and participatory in the study.

Ago-Ayo community

The *Baalé* informed me that the community had women's age grade groups. The age grade comprised of married women of similar ages grouped together. Each group consisted of between four and eight married women. Each age grade group has a leader, who chairs the events of the group. He requested for the presence of each leader of the age groups to his palace to be part of the meeting. A total of 12 women were present at the meeting. Following deliberations based on the set criteria eight women were chosen, which were not leaders of the age group to be involved in the training and to be mother peer-educators.

Ilaju community

A new *Baalé* for Ilaju had recently been appointed at the commencement of the study. The community had a women's collective, through which a village loan and saving scheme was implemented. The scheme was chaired by a woman referred to as

‘mummy nurse’. She is called so, because she is a traditional birth attendant. In addition, she operates a patent medicine store in the community. The *Baalé* requested that she works with the women leader in identify capable women who meet the criteria for selection to be involved in the training. Overall, a total of thirty-two mothers; eight from each community were selected across the four experimental communities for training.

3.7.3 Training objectives for mother peer educators

1. To increase the knowledge of selected peer educators on child survival intervention
2. To strengthen skills of peer educators on utilisation of household child survival intervention
3. To build a mass of peer educators who will provide knowledge, skills and support to fellow mothers on household child survival interventions

3.7.4 Training methodology

A training manual was developed and adapted from previously used community based agents and health volunteers training manuals on maternal and child health in Nigeria, developed by Association for Reproductive and Family Health (ARFH) in 2011. Further inputs were made into the manual based on preliminary results from the baseline study to ensure that gaps in mother’s knowledge and practice of child survival intervention as observed from the results are covered during the training. The training manual was reviewed by a team of nutritionist before its usage in the training. The training manual is provided as Appendix VI.

In each intervention community the training for peer educators was held for 18 hours spread across three days; six hours per day. The training topics were project introduction, under-five children, exclusive breastfeeding, immunisation, diarrhoea, malaria, community mobilisation & participation, sanitation & hygiene, family planning, and health service utilisation. Training methods utilised were storytelling, use of proverbs, role play, song singing, brainstorming and development of key messages. Key messages were developed from the training topics to ensure that consistent and right messages were being shared with other mothers in the communities (Kronborget *al.*, 2007). The training for peer educators was tailored to the

literacy level of the peer educators, and was also one of the reasons why core messages were developed. The 10 clear, correct and consistent messages were developed in participation with the mothers that were being trained as peer educators. The 10 messages were;

1. A high number of children below the age of five years are dying in Nigeria and a higher number are from rural areas in Nigeria.
2. Exclusive breastfeeding has the potential of reducing the number of children dying, and ensure that children are protected from illness and diseases
3. The first yellowish milk that comes out from the mother's breast after child birth should be given to the child, because it contains all the nutrient the child requires, and offers protection from infection and illness
4. Immunisation does not have a permanent side effect on children, rather it helps protect children from illness, disease and death
5. The negative consequences of not giving children immunisation may not/cannot be reversed in life
6. Diarrhoea is caused by unclean environment, dirty hands and unkempt children eating plates. Mothers should endeavour to keep their households clean, and wash their hands before feeding their children.
7. Mothers should continue to breast feed their children when they have diarrhoea
8. Mothers should prepare Sugar Salt Solution for their children when they have Diarrhoea, or go to the nearest health center or Patent Medicine Vendor to buy the pre-packed Oral Rehydration Salt (ORS)
9. Children who have fever which increase steadily after 48 hours should be taken immediately to the Health Center
10. Mothers should present their children for the monthly Growth Monitoring

3.7.5 Role and responsibilities of mother peer educators

The roles and responsibilities of the mother peer educators are to conduct visit to households of under-five children every two weeks, provide mothers with the right information, skills, support on specific child survival intervention, reinforce mothers' learning by providing counselling and support during these home visits, refer mothers with sick under five children to the nearest health facility and encourage mothers to participate in the monthly Growth Monitoring. Mother peer educators made a total 22

contacts with each mother and child pair in the EG. Also, mother peer educators were encouraged to identify other windows of opportunity to reach out to mothers with valuable messages.

3.7.6 Data collation during intervention

(a) Monitoring checklist

A 12 item monitoring checklist was developed to gather information on the following mother caring practice: (i) mothers practice of exclusive breastfeeding if child is 0-6 months old; (ii) reason for practicing exclusive breastfeeding; (iii) practice of continued breastfeeding if child is older than 6 months; (iv) reason for continued breastfeeding; (v) prevalence of diarrhoea two weeks before the visit; (vi) how was the diarrhoea treated; (vii) prevalence of fever two weeks before the visit; (ix) how was the fever treated; (x) child's current immunisation status; (xi) any visit to the health clinic; (xii) for what reason was the visit made to the clinic? Wherein Diarrhoea was defined as the passage of frequent liquid stools, and also recorded diarrhoea if the mother reported *Igbe Gburu* (the local term for diarrhoea).

(b) Anthropometric measurement

Children's weight was measured with children dressed lightly and without shoes. Infants 0-24 months were measured lying down in a supine position using a Length-board and children > 24 months were measured while standing. Ages of children were verified on presentation of immunisation card or birth certificates.

3.7.7 Data analysis of intervention

(a) Anthropometric measures

The collected anthropometric data were entered into the WHO Anthro 2006 software version 3.1, to generate nutritional indices; wasting, stunting and underweight. These nutritional indices were classified based on their Z-scores (<-3SDs (severe form); -3 to <-2SDs (moderate form); -2 to -1SDs (mild form) and >-1SD (normal)), with a unique code assigned to each child. These nutritional indices were then transferred from the WHO Anthro 2006 using Stat-Transfer version 12 to SPSS version 20.0 for final analyses.

(b) **Monitoring checklist**

Checklist items were entered into IBMSPSS version 20.0. The three key child survival interventions that were evaluated with reference to this study are exclusive breastfeeding, oral-rehydration therapy (ORT) and Immunisation, and were selected from the checklist for statistical analysis.

(c) **Statistics**

Data were analysed using Descriptive and Inferential analyses; frequency distributions, Chi-Square, Analysis of Variance (ANOVA), Factors that were found to be significant at $p < 0.05$ from bivariate analysis were entered into the logistic regression model, to compare before and after intervention results.

3.8 Quality control

Quality control measures used in this study are ; training and re-training of Research assistants and verification through role plays, adjustment of weighing instruments to ensure the precision of measurement, monitoring of data collection process, data cleaning and analysis (keeping the raw data). Also statistical analyses such as frequencies, means ranges were used to detect errors and anomalous values

3.8.1 Ethical consideration

The study protocol was approved by the joint ethical committee of the University of Ibadan and the University College Hospital, Ibadan (approved protocol number- UI/EC/10/0126). In addition, the Oyo State Research Ethical Committee approved the study (approval number- AD 13/479/152). The approval letters are provided as Appendices I, II and III. In addition, permission to carry out the study was requested from the supervisory counsellor for health in the two LGAs, and community leaders. Informed consent was sought from mothers during the baseline and during recruitment to part of the study in the three study groups.

Confidentiality of data: Each mother and child pair representing a household was assigned coded identity number that was used throughout the study. These codes cannot be traced to the households. Data collected were stored in a laptop with a password known only to the principal investigator. Data generated from the study was not given out for lease or sold, when used in publication no name or any identifier will be used. The data generated will be destroyed after five years following the end of the study.

Translation of research tool: The semi-structured questionnaires used in collecting information at baseline were interviewer-administered. Interviewers were trained for three days on basic ethics in collecting information and interviewers were people who spoke the local dialect and English language fluently. Similarly, the tools were pre-tested in a similar socio-cultural environment and adjusted for inadequacies before they were used in the study communities.

Beneficence: The goal of this study is to reduce the number of children less than five years old dying in rural communities of preventable diseases, by providing mothers with correct and factual information, and skills on the use of child survival interventions. Also the study further encourages mothers to utilise primary health care centres in their communities, thereby improving their health seeking behaviour.

Mal-efficiency: The risk involved in this study was not more than the normal minimal risk encountered in everyday life. The visit by the data collectors to the mothers and children for GMP is a normal health routine examination where children's height/length and weight are measured and documented in the child's health card. The GMP process takes between 30 and 40 minutes and was done monthly in the EG, and periodically in the MSSG and CG. The home visit made by the peer educators to mothers was done bi-weekly. The mother and her peer educator decided when best to schedule the visit so as not to disrupt mothers' normal routine lifestyle and livelihood.

Voluntary: The participation of the mother and child pair in this study was entirely voluntary. The mother and child pair was free to withdraw from the study at any time. Data already collected can be destroyed if so desired by the mother and child pair. The children's mothers were made to know that if they decided to withdraw from the study, they would not be stigmatized or discriminated against in the community.

CHAPTER FOUR

RESULTS

4.0 Socio-demographic characteristic of mothers and children

The summary of the Socio-demographic characteristics of all mothers interviewed is presented in Table 4.1. The mean age (SD) of all mothers was 27.45(\pm 6.35) years, mothers' mean age at first marriage was 19.4(\pm 4.00) years and 28.8% of the mothers had no formal education. Fifty-six percent of the mothers were Christians and 44% were Muslims. The average number of persons per household was 5.3, with a household size ranging between two and twenty. Fifty-nine percent of the mothers had an income of less than ₦5000 a month. Sixty-two percent of the mothers reported having control over their income earning. The mean number of living children per woman was 3.3 and 13.3% of the mothers at one time had lost a child under-five years. Mothers who had delivered their last children at a health facility were 43.7%, and 96% of the mothers were in marital union and were living with their husbands. Four hundred and eight (90.5%) of all mothers interviewed were not using any form of family planning method at the time of assessment.

4.1 Household characteristics

The households' characteristics of the all mother and child pair interviewed were assessed. Thirty-seven percent of the households were living within their extended family compound. Households who owned a farmland and cultivated it were 78%, others reported that their farmland were on lease from the owners. Major crops grown were cassava, yam, maize, pepper, tomatoes and *ewedu* (*Corchorous Olitorius*). Table 4.2 shows the household water, sanitation and hygiene characteristics. Major source of water for all the households was well water, rivers/streams and government pipe borne water. The source of drinking water for the households was similar in pattern to their major source of water. Majorly, cooking was done outside the houses. The survey showed 85% of all households had no toilet facility, and were using near bush or field.

Table 4.1. Socio-economic & demographic characteristics of mothers in the three study groups

Characteristics	N=187 EG n (%)	N=215 MSSG n (%)	N=49 CG n (%)	p
Maternal Socio-demographic				
Age in years* Mean±SD=27.45±6.35years	27.0±5.9	27.3±6.6	29.3±6.4	0.85
Educational status +				
No formal education	54(28.9)	59(27.4)	17(34.7)	0.68
Primary education	89(47.6)	79(36.7)	16(32.7)	
Secondary education	42(22.5)	67(31.2)	16(32.7)	
Tertiary education	2(1.1)	10(4.7)	0(0.0)	
Age at first Marriage* Mean±SD=19.4±4.00years	19.4±4.3	19.5±3.8	19.6±4.1	0.98
Marital status				
Married and living with Spouse	180(96.3)	209(97.2)	47(95.9)	0.15
Not Married/Never Married	2(1.1)	3(1.4)	1(2.04)	
Separated/Divorced/ widowed	5(2.6)	3(1.4)	1(2.04)	
Livelihood/occupation				
Not employed	12(6.41)	19(8.8)	7(14.3)	0.01
Civil servants	4(2.13)	8(3.7)	1(2.0)	
Traders	66(35.3)	87(40.5)	15(30.6)	
Artisans	35(18.7)	42(19.5)	4(8.2)	
Farmers	70(37.4)	59(27.4)	22(44.9)	
Household Size				
≤ 5	85(45.5)	120(55.8)	19(38.8)	0.39
>5-10	74(39.6)	80(37.2)	20(40.8)	
>10	28(14.9)	15(7.0)	10(20.4)	
Monthly income++				
Not earning an income	9(4.8)	19(8.8)	4(8.2)	0.06
≤5000	118(63.1)	112(56.7)	28(57.1)	
>5000-7000	29(15.5)	34(15.8)	10(20.4)	
>7000-9000	4(2.1)	14(6.5)	1(2.0)	
>9000-10000	4(2.1)	13(6.0)	1(2.0)	
>10,000	23(12.3)	13(6.0)	5(10.2)	

*Values are means ± SD, others n (%) and χ^2 , $p=0.05$

+Educational status categories refer to highest level of education attended, whether or not that level was completed.

++ Income is in Nigerian Naira currency at

₦156.17=1USD(www.cenbank.org/rates/exrate.asp?year=2011)

Table 4.2 Household water, sanitation and hygiene

Household characteristics	EG n(%)	MSSG n(%)	CG n (%)	p
Household water source				
Purchased	1(0.5)	1(0.5)	0(0.0)	
Well water	80(43.0)	85(39.5)	22(44.9)	
Private borehole	8(4.3)	13(6.0)	0(0.0)	0.91
Government pipe borne	23(12.4)	27(12.6)	5(10.2)	
Rain water	1(0.5)	1(0.5)	1(2.0)	
Stream/Rivers	73(39.0)	87(40.5)	21(42.9)	
N	186	214	49	
Major source of drinking water				
Bottled water	1(0.05)	0(0.0)	0(0.0)	
Sachet water	8(4.3)	6(2.8)	0(0.0)	
Well water	72(38.5)	73(34.0)	20(40.8)	
Private borehole	9(4.8)	13(6.0)	1(2.0)	0.84
Government pipe borne	26(13.9)	34(15.8)	5(10.2)	
Rain water	1(0.5)	2(0.9)	1(2.0)	
Stream/Rivers	69(36.9)	86(40.0)	22(44.9)	
N	186	214	49	
Location of household kitchen				
Inside the house	41(21.9)	72(33.5)	5(10.2)	
Outside the house	135(72.2)	119(55.3)	36(73.5)	0.00
Shared kitchen	2(1.1)	7(3.3)	1(2.0)	
Along the corridor	8(1.8)	14(3.1)	7(1.6)	
N	186	212	49	
Sewage disposal				
Water closet	10(5.3)	10(4.7)	1(2.0)	
Pit latrine	15(8.0)	28(13.0)	2(4.1)	0.45
Bush/ field	159(85.0)	175(81.4)	45(91.8)	
other outlets	1(0.5)	0(0.0)	0(0.0)	
N	185	213	48	

Table 4.3 Ownership of common household items

Assets	EG n (%)	MSSG n (%)	CG n (%)	Total*
Radio	103(37.0)	149(53.0)	27(10.0)	279(61.9)
Television	57(29.0)	128(65.0)	11(6.0)	196(43.5)
Mobile Phone	112(38.0)	154(52.0)	30(10.0)	296(65.6)
Motor Car	21(34.0)	30(49.0)	10(16.0)	61(13.5)
Motor bike	66(45.0)	64(44.0)	16(11.0)	146(32.4)
Bicycle	5(42.0)	4(33.0)	3(25.0)	12(2.6)

* Proportion of all household owning the asset

Table 4.3 presents the responses provided by mothers on ownership of common household items. Radio and mobile phone are the two most owned assets in all the households; 61.9% and 65.6 % respectively. The mobile phones were owned majorly by men than by women within the households. Overall, 32% of the households had a motor bike, 14% had a motor car and 3% had bicycles for transportation.

Table 4.4.Age-group of children at baseline

Age in months	N= 187		N= 215		Total
	EG n (%)	MSSG n(%)	CG n(%)		
0.0-0.5.9	45(24.1)	50(23.3)	7(14.3)		102(22.6)
6.0-11.9	46(24.6)	48(22.3)	15(30.6)		109(24.2)
12.0-17.9	32(17.1)	52(24.2)	12(24.5)		96(21.3)
18.0-23.9	29(15.5)	32(14.9)	7(14.3)		68(15.1)
24.0-29.9	26(13.9)	20(9.3)	4(8.2)		50(11.1)
30.0-35.9	9(4.8)	13(6.0)	4(8.2)		26(5.8)
Mean(SD)	13.72± 9.01	13.49± 8.94	14.22± 8.76		13.67± 8.94

$\chi^2=8.685$, $p=0.56$

Table 4.4 presents the age group of children across the three study groups. Overall, mean (SD) age of children was 13.67± 8.94 months. The mean (SD) age of children in EG was 13.72± 9.01 months, 13.49± 8.94 months in the MSSG, and 14.22± 8.76 in CG. The age group of the children did not show any significant association with the study groups ($\chi^2=8.685$, $p=0.56$), using a Chi-square test. Fifty-one percent of the children were males. Twenty-three percent of the children at baseline were below six months old, whilst the age category with the least number of children was 30.0-35.9 with 26 children (5.8%). All the children were breastfed by their mothers.

Table 4.5 Knowledge of child survival interventions by mothers

Variables	Frequency	Percentages
Why is exclusive breastfeeding important (n= 355)		
Makes the infant grow well, and have strong bones	257	72.4
Reduces illness and disease	9	2.5
Increase immunity	6	1.7
Not important	38	10.7
Do not know why it is important	20	5.6
Never heard of it	25	7.0
What is the cause of Diarrhoea in children(n=319)		
Teething	159	49.8
Dirty environment, unclean feeding plates	39	12.2
Overeating	33	10.4
Too much heat	20	6.3
Do not know the cause	68	21.3
Is Immunisation important for the child's health (n=435)		
Yes	433	99.5
No	2	0.5
Why is immunisation important for the child's health		
Prevents illness, sickness and diseases	318	70.5
Keeps the child healthy and strong	55	12.2
Prevents Polio, yellow fever, DPT	34	7.5
Do not know the importance	44	9.8
Ever received a talk or lecture on breastfeeding (n=433)		
Yes	295	68.1
No	138	31.9
Is child weight measurement important (n=422)		
Yes	316	74.9
No	78	18.5
Do not know	28	6.6
Why is child weighing important(n=375)		
To know if the child is in good health	81	21.6
They say it is good	31	8.3
To know if the child is eating well	20	5.3
To know the child's weight	105	28.0
Do not know	138	36.8
Total	451	100

Table 4.6 Practice of child survival interventions by mothers

Variables	Frequency	Percentages
What was the first food fed to the infant after birth		
Breast milk	139	30.8
Water	238	52.8
breastmilk and water	12	2.7
local herbs	3	0.7
Water and glucose	56	12.4
Infant formula	3	0.7
Did you breastfeed your youngest child		
Yes	408	90.5
No	43	9.5
When did you start breastfeeding after birth		
Within an hour after birth	131	29.0
More than an hour after birth	238	52.8
A day after birth	58	12.9
2 days after birth	21	4.7
A week after birth	3	0.6
How often do you breastfeed the child in a day		
Thrice a day	16	3.5
Only when crying	54	12.0
Upon feeling the child's stomach	4	0.9
At several intermittent intervals	377	83.6
Apart from breastmilk did you give the child any other food or liquid		
Yes	392	86.9
No	59	13.1
How old was the child when you introduce the child to family food (n=328)		
0-3 months	43	13.1
4-6 months	127	38.7
7-9 months	77	23.5
10-12 months	41	12.5
>12 months	40	12.2
How many times in a day do you feed the child older than 6months (n=377)		
1-3 times daily	114	30.2
4-6 times daily	13	3.5

Table 4.6 Cont'd

Variables	Frequency	Percentages
When crying	4	1.0
Currently still breastfeeding		
Yes	354	78.5
No	97	21.5
How old was the child when you stopped breastfeeding (n=334)		
<12 months	8	2.4
≥12 months but < 15 months	10	3.0
≥ 15 months but < 24 months	140	41.9
≥ 24 months	176	52.7
Do you still breastfeed the child when the child has diarrhoea(n=395)		
Yes	222	56.2
No	173	43.8
How do you treat diarrhoea in the child(n=335)		
Treated with Anti-biotics	125	37.3
Treated with SSS	48	14.3
Treated with ORS	56	16.7
Diarrhoea stopping drugs	83	24.8
No treatment	23	6.9
Did you child sleep under the ITN yesterday(n=417)		
Yes	195	46.8
No	222	53.2
Has your child received a complete vaccination (n=450)		
Yes	269	59.8
No	181	40.2
When the child has malaria how is the child treated (n=406)		
Use local herbs and traditional medicines	55	13.5
Administer Paracetamol and anti-malarial drugs	153	37.7
Take the child to the health clinic/centre	140	34.5
Treat at home with drugs, and later take to the health centre	58	14.3
Total	451	100

Table 4.7 Key outcome variables at baseline

Variables	N=187 EG n(%)	N=215 MSSG n(%)	N=49 CG n(%)	χ^2	P
Breastfeeding initiation					
Early initiation	57(30.5)	59(27.4)	15(30.6)	0.514	0.77
Delayed initiation	130(69.5)	156(72.6)	34(69.4)		
Breastfed exclusively					
No	169(90.4)	178(82.8)	45(91.8)	5.88	0.53
Yes	18(9.6)	37(17.2)	4(8.2)		
Duration of breastfeeding*	28.8±14.0	18.4±10.2	28.1±15.2	28.57	0.00
Initiation of complementary feeding N=328					
Early initiation	61(46.2)	90(56.25)	19(52.7)		
Timely initiation	40(30.3)	26(16.25)	11(30.6)	12.29	0.26
Late initiation	31(23.5)	44(27.5)	6(16.7)		
Children's nutritional status					
Wasting N=443	20(10.8%)	30(14.3%)	5(10.4%)	3.029	0.81
Stunting N=434	109(61.6)	147(70.0)	28(59.6)	5.767	0.45
Underweight N=427	25(14.3)	36(17.6)	3(6.38)	5.409	0.49
Mothers CSIs knowledge score*	2.7±1.7	3.0±1.6	3.0±1.6	2.56	0.07
Mothers CSIs practice score *	7.6±3.1	8.3±3.2	8.0±3.0	1.07	0.34
Immunisation status by age					
Not completed	94(50.3)	65(30.3)	22(45.8)	14.843	0.00
Completed	93(49.7)	150(69.8)	26(54.2)		

* Values are Mean(SD)-Anova, others are χ^2

4.1.1 Initiation of breastfeeding

Overall, 131(29%) of the 451 children were put to breast within an hour of birth; 57(30.5%) in EG, 59(27.4%) in MSSG and 15(30.6%) in CG. Some mothers reported initiating breastfeeding over an hour but less than 24 hours after child birth; 97(51.9%) in EG, 117(54.4%) and 24(49%) in the CG. Mothers who initiated breastfeeding a day after birth were 24(12.8%) in EG, 28(13.0%) in MSSG and 6(12.2%) in CG. Seven (3.7%), 10(4.7%) and 4(8.2%) children were put to breast after two days after delivery in EG, MSSG and CG respectively. Three mothers (1.6%) initiated after a week of child birth. Figure 4.1 below shows the number of mothers practicing early and delayed breastfeeding initiation.

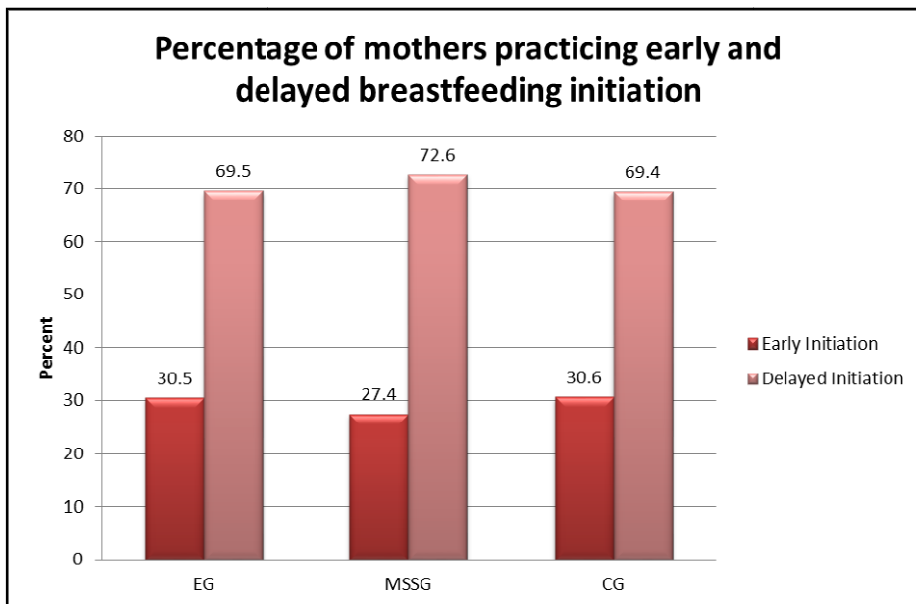


Figure 4.1 Percentages of mothers practicing early and delayed breastfeeding initiation across the three study groups

Chi-square test showed no association between mothers income and timely initiation of breastfeeding $\chi^2(1) = 1.802$, $p= 0.11$, place of child birth $\chi^2(1) = 4.754$, $p= 0.44$, and mothers level of education $\chi^2(1) = 1.536$, $p= 0.13$ across the three study groups. However, mothers being in a marital union; living with husband was significantly associated with timely initiation of breastfeeding $\chi^2(1) = 5.331$, $p= 0.01$ in the three study groups.

Pre-lacteal feeding

Children were first fed as follows after birth: water only; 238(52.8%), breastmilk only 139(30.8%), water mixed with glucose 56(12.4%), breastmilk and water 12(2.7%), local herbs 3(0.7%), and infant formula 3(0.7%). Figure 4.2 below shows mothers' practice of pre-lacteal feeding.

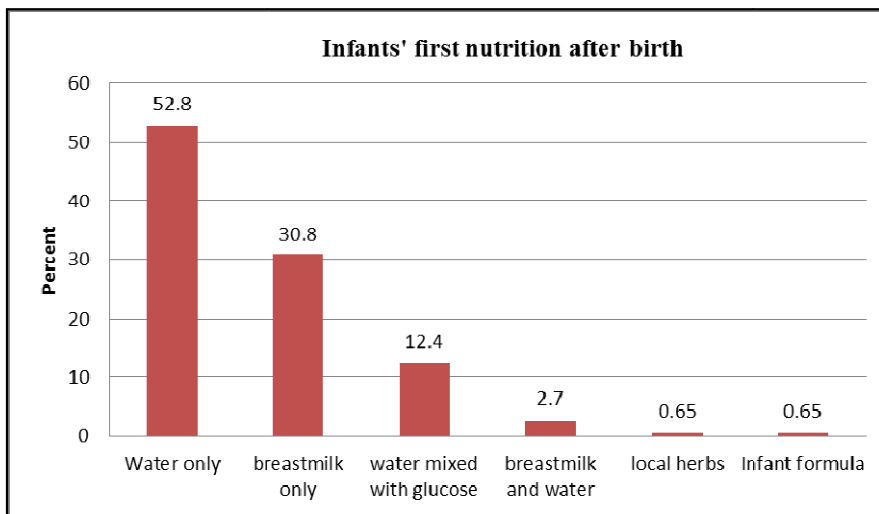


Figure 4.2. Infants' first nutrition after birth as reported by their mothers

4.1.2 Exclusive breastfeeding

Overall, 13.1% of all mothers were practicing exclusive breastfeeding at the time of baseline assessment; 9.6% in EG, 17.2% in MSSG and 8.8% in CG. Probing for mothers' practice of exclusive breastfeeding, an indirect question was posed to mothers to avoid mothers responding with either a Yes or No. The question posed was: *apart from breastmilk did you give your child any other liquid or food, and why?* This generated the reasons which were used to deduce if mothers were practicing exclusive breastfeeding. Reasons provided by mothers for not practicing exclusive breastfeeding in overall were; to reduce the amount of breast milk consumed by the child; child was older than six months, and so could not practice exclusive breastfeeding; to supplement breastmilk consumed by the child; had to give water to the child, and to provide additional nutrient to the child.

Mothers adduced the following reasons for giving water to their children: water is a form of food; it is traditional to give water to welcome the child to the family; to quench thirst; to calm the baby and put the baby to sleep, and to stop coughing or hiccups. The number of children born by mother $\chi^2 (1) = 0.055$, $p=0.51$, religion $\chi^2 (1) = 0.387$, $p=0.31$, household size $\chi^2 (1) = 0.389$, $p=0.28$, level of education $\chi^2 (1) = 2.254$, $p=0.09$ were not significantly associated with practice of exclusive breastfeeding. However, mothers' practice of exclusive breastfeeding was significantly associated with being married $\chi^2 (1) = 8.269$, $p=0.01$, living in the two control communities; MSSG and CG $\chi^2 (1) = 5.405$, $p=0.01$, and having a good knowledge of breastfeeding $\chi^2 (1) = 4.962$, $p=0.03$.

The significant predictors of exclusive breastfeeding found on bivariate analysis were mothers being in a marital union, living in the control communities (MSSG and CG), and having a good knowledge of breastfeeding. Logistic regression was performed to ascertain the effect of being in marital union, living in the control communities on having a good knowledge of breastfeeding. The logistic regression model was statistically significant identified the three variables as having added statistically significantly to the prediction $p < .05$, $F(3,407) = 7.112$, $p < .0005$, $R^2 = .223$.

4.1.3 Duration of breastfeeding

The overall mean (SD) duration of breastfeeding among the mothers was 24.1± 13.6 months. The mean (SD)of breastfeeding duration across the study groups by mothers were 28.8±14.0 months in EG, 18.4±10.2 months in MSSG, and 28.1±15.2 months in CG. A one-way ANOVA showed a statistically significant difference between the groups; ($F(2,1)=28.57, p=0.00$). A Tukey post hoc test revealed statistically significant difference between mothers duration of breastfeeding in the EG and MSSG ($p=0.00$), statistically significance between mothers in CG and MSSG ($p=0.00$), but no significant difference between mothers in the EG and CG($p=0.95$). Chi –Square test showed no statistically significant association between the gender of the child and breastfeeding duration across the three study groups $\chi^2 (1) = 4.440, p =0.56$.

Fifty-one percent of the mothers had no reasons for choice of breastfeeding duration. Forty-nine percent of mothers gave the following reasons for the length of time they have to breast feed: 28.1%(to enable the child attain the milestone of walking before stopping breastfeeding), 2.2%(the belief that male child should be breastfed for longer duration than girl child), 4.4%(mothers need to return to work), 2.4(used as a child spacing method), and 3.8%(based on when child could eat un-mashed family meals). Eight percent of the remaining mothers had pre-determined duration for their breastfeeding; 2.2 %(15months duration), 1.6 %(18months duration) and 4.2 %(24months).

4.1.4 Complementary feeding

Thirteen percent of mothers initiated complementary feeding when their children were less than three months old, 39% initiated between four and six months, and 24% initiated between 7 and 9 months. Sixty-two percent of the mothers reported that there were special foods used in initiating complementary feeding. Mashed family diet was used in initiating complementary feeding in 63.8% of the children; (26.2% on *Amala/lafun*(dry Yam/Cassava flour; *Dioscorea alata/Manihot esculenta*), 21.4% on Beans and 6.2% on *Ewedu(Corchorous Olitorius)*). Other foods were locally prepared maize gruels(*pap*)(12.3%), tea(19.8%), milk (6.6%) and noodles (6.6%). This break down is shown in Figure 4.3.

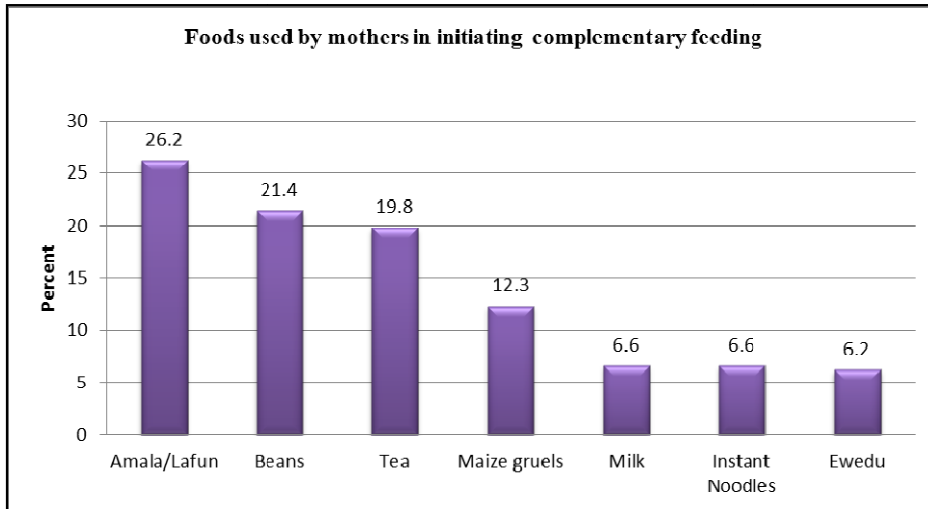


Figure 4.3Foods used by mothers in initiating complementary feeding

4.1.5 Mothers' knowledge and practice levels of CSIs

The knowledge and practice variables presented in Tables 4.5 and 4.6 were used in generating an 8 point knowledge scale and a 17-point practice scale. The knowledge level of the mothers was categorised into a poor (0-3), fair (4-6) and good (7-8). The practice level of mothers was categorised into poor (0-5), fair (6-11) and good (12-17).

Overall, mothers mean knowledge scores was 2.91 ± 1.7 . Mothers mean knowledge scores by study group were 2.7 ± 1.7 in EG, 3.0 ± 1.6 , and 3.0 ± 1.6 in CG. Mothers overall mean practice scores was 8.0 ± 3.0 . Mean practice scores by study group were 7.6 ± 3.1 in EG, 8.3 ± 3.2 in MSSG, and 8.0 ± 3.0 in CG. There was no statistical significant difference in mothers' knowledge and practices scores between the groups as determined by one-way ANOVA; ($F(2, 1) = 2.560, p = 0.07$) and ($F(2, 1) = 1.070, p = 0.34$) respectively.

Table 4.8 Mothers knowledge level of child survival interventions

Knowledge level	EG n (%)	MSSG n (%)	CG n (%)	Total
Poor (0-3)	109(58.3)	112(52.1)	24(49.0)	245(54.3)
Fair (4-6)	72(38.5)	94(43.7)	24(49.0)	190(42.1)
Good (7-8)	6(3.2)	9(4.2)	1(2.0)	16(3.6)
Total	187(41.5)	215(47.7)	49(10.9)	451(100)

$\chi^2 = 2.876, p = 0.57$

Table 4.8 presents mothers' knowledge levels of CSIs categorised into 'poor', 'fair' and 'good'. Overall, 54.3% of mothers had poor knowledge levels of CSIs. Only 3.6% of all mothers interviewed had good knowledge level of CSIs. There was no significant association between mothers' knowledge level of CSIs and the community in which they lived.

Table 4.9 Mothers practice level of child survival interventions

Practice level	EG n(%)	MSSG n (%)	CG n (%)	Total
Poor (0-5)	49(26.2)	36(16.7)	8(16.3)	93(20.6)
Fair (6-11)	117(62.6)	144(67.0)	33(67.4)	294(65.2)
Good (12-17)	21(11.2)	35(16.3)	8(16.3)	64(14.2)
Total	187(41.5)	215(47.7)	49(10.9)	451(100)

$\chi^2 = 7.142, p = 0.12$

Table 4.9 shows mothers' practice levels of CSIs categorised into 'poor', 'fair' and 'good'. Overall, 20.6% of mothers had poor practice levels of CSIs. Only 14.2% of all mothers interviewed had good practice level of CSIs. There was no significant association between mothers' practice level of CSIs and the community in which they lived

Table 4.10 Mothers' educational level by practice level of CSIs

Educational level	Poor (n %)	Fair (n %)	Good (n %)	Total
No formal Education	35(26.9)	81(62.3)	14(10.8)	130(28.8)
Primary School Education	43(23.4)	119(64.7)	22(12.0)	184(40.8)
Secondary School Education	14(11.2)	88(70.4)	23(18.4)	125(27.7)
Tertiary Education	1(8.3)	6(2.0)	5(7.8)	12(2.7)
Total	93(20.6)	294(65.2)	64(14.2)	451(100.0)

$\chi^2 = 112.159, p = 0.00$

Overall, eleven percent of mothers with no formal education had good practice level of CSIs. Also, eighteen percent of mothers with secondary school educational level were in the good category of CSIs practice. A significant association was found between mothers' educational level and their practice level of CSIs.

Table 4.11 Mothers' educational level by knowledge level of CSIs

Educational level	Poor (n %)	Fair (n %)	Good (n %)	Total
No formal Education	103(42.0)	27(14.2)	0(0.0)	130(28.8)
Primary School Education	94(38.4)	89(46.8)	1(6.3)	184(40.8)
Secondary School Education	47(19.2)	68(35.8)	10(62.5)	125(27.7)
Tertiary Education	1(0.4)	6(3.2)	5(31.3)	12(2.7)
Total	245(54.3)	190(42.1)	16(3.5)	451(100.0)

 $\chi^2=20.219, p=0.00$

In total, none of the mothers with no formal education level had a knowledge level of CSIs categorised as good. Sixty- two percent of mothers with secondary school education had good knowledge level of CSIs.

Table 4.12 Diarrhoea treatment offered by mothers two weeks preceding assessment

Treatment for diarrhoea	N=134 EG n(%)	N= 167 MSSG n(%)	N= 34 CG n(%)	Total
Treated with Antibiotics	64(47.8)	48(28.7)	13(38.2)	125(37.2)
Treated with SSS	22(16.4)	24(14.4)	2(5.9)	48(14.3)
Treated with ORS	10(7.5)	37(22.2)	9(26.5)	56(16.7)
Diarrhoea stopping drugs	35(26.1)	41(24.6)	7(20.6)	83(24.8)
Not treated	3(2.2)	17(10.2)	3(8.8)	23(6.9)
Total	134(40.0)	167(49.9)	34(10.1)	335(100.0)

A total of 335 children accounting for 74.3% had diarrhoea within two weeks preceding the assessment. Fourteen percent of the mothers treated the diarrhoea episode using Salt Sugar Solution: 16.4% of mothers in EG, 14.4% mothers in MSSG and 5.9% mothers in the CG. Mothers who administered oral rehydration salt were 7.5%, 22.2% and 26.5% in the EG, MSSG and CG respectively. Mothers continued breastfeeding during diarrhoea episodes in their children; 100(53.5%), 97(45.1%) and 25(51.0%) in the EG, MSSG and CG respectively. Overall 39(8.6%) of the mothers had accurate knowledge of the cause of diarrhoea in children

Table4.13. Vaccination by age of children at baseline

	N=187	N=215	N=48	
Vaccination status	EG n(%)	MSSG n(%)	CGn(%)	Total
Not completed	94(50.3)	65(30.3)	22(45.8)	181(40.2)
Completed	93(49.7)	150(69.8)	26(54.2)	269(59.8)

$\chi^2 = 14.843, p=0.00$

Children with completed vaccination by age were 49.7% in the EG, 69.8% in MSSG and 54.2% in the CG. The analysis showed high percentage of children across the study groups which have received few doses of vaccination in conformity with their ages. Overall 433(96%) of the mothers affirmed positively that immunisation was good for the child's health, 2(0.4%) of the mothers said immunisation was of added value to the child's health and 16(3.5%) gave no response. 34(7.5%) of the mothers were able to mention at least two vaccine preventable diseases (with Poliomyelitis mostly mentioned),55(12.2%) said to keep the child healthy, strong and well, 318(70.5%) reported that it prevents illness, sickness and diseases and 44(9.8%) did not know any benefits of child immunisation.

Chi-square test showed there were no significant associations between child's complete vaccinations and mothers' level of education $\chi^2(1) = 2.786, p=0.05$, mothers' knowledge of immunisation $\chi^2(1) = 0.000, p=0.56$. However, statistically significant associations were observed between child's complete vaccinations and living in the two control communities; MSSG and CG $\chi^2(1)=11.488, p=0.00$ and by child's age $\chi^2(1) = 4.593, p=0.02$

4.1.6 Ownership and use of insecticide treated nets (ITNs)

Assessment of mothers ITN ownership across the three study groups showed 55% of mothers in the EG, 66% of mothers in MSSG and 40.8% mothers in CG owned ITNs. We assessed mothers' ownership of ITNs as proxy to measure if their children under five years were sleeping under the ITN. The result showed that on the night before the survey, 76.7% children in EG, 70.4% children in MSSG and children in 80% CG slept under an ITN.

Mothers who owned ITNs but were not using them, gave the following reasons for not using the ITNs: ignorance on how to use the ITNs (58.3% in EG, 50.0% in MSSG and 75% in CG); children keep crying when under the ITN (4.2% in EG, 23.8% in MSSG and 25% in CG) and Heat as a cause (37.5% in EG and 26.2% in MSSG). Mothers' reasons for not using the ITNs were similar across the study groups.

Table 4.14. Health facility utilisation by mothers

	N=127	N=159	N=33	
Reasons for visiting the health facility	EGn (%)	MSSGn (%)	CG n(%)	Total
Malaria	58(45.7)	58(36.5)	11(33.3)	127(39.8)
Immunisation	36(28.3)	52(32.7)	17(51.5)	105(32.9)
Routine check up	16(12.6)	28(17.6)	0(0.0)	44(13.8)
Other minor ailment	17(13.4)	21(13.2)	5(15.2)	43(13.5)

$\chi^2=14.282$ $p=0.07$

4.2 Determine fathers' involvement in mother's use of child survival interventions

Table 4.15. Socio-economic & demographic characteristic of children's fathers

Characteristics	EG(n %)	MSSG(n %)	CG(n %)	p
Paternal Socio-demographic				
Age in years*	36.78±7.73	36.18±9.38	40.73±11.71	0.32
Mean± SD=36.93(±9.27) years				
Educational status+				
No formal education	49(28.2)	35(16.9)	9(21.4)	
Primary education	63(36.2)	51(24.6)	13(31.0)	
Secondary education	57(32.8)	102(49.3)	17(40.5)	
Tertiary education	5(2.9)	19(9.2)	3(7.1)	0.00
Livelihood/Occupation				
Not employed	1(0.5)	2(1.0)	0(0.0)	
Civil servants	6(3.3)	16(7.5)	0(0.0)	
Traders	50(27.2)	69(32.4)	10(22.2)	
Artisans	14(7.6)	32(15.0)	5(11.1)	
Farmers	113(61.4)	94(44.1)	30(66.7)	0.02
Support provided by Fathers				
Provides Money	133(73.1)	155(72.4)	36(80.0)	
Assist in feeding the baby	4(2.2)	3(1.4)	1(2.2)	
Fetches water for the Household	4(2.2)	1(0.5)	1(2.2)	
Bathe the Child	7(3.8)	2(0.9)	1(2.2)	
Carries the Child	1(0.5)	2(0.9)	0(0.0)	
No form of support	33(18.1)	51(23.8)	6(13.3)	0.43
Monthly income++				
≤5000	0(0.0)	4(1.9)	0(0.0)	
>5000-7000	5(2.7)	7(3.3)	0(0.0)	
>7000-9000	1(0.5)	3(1.4)	0(0.0)	
>9000-10000	1(0.5)	2(0.9)	0(0.0)	
>10,000	18(9.8)	48(22.5)	10(21.7)	
Does not know the income	158(86.3)	149(70.0)	36(78.3)	0.02

*Values are means ± SD for Anova, and others n (%).

+ Education categories refer to highest level of education attended, whether or not that level was completed + +Income in Nigeria Naira currency at

₦156.17=1USD(www.cenbank.org/rates/exrate.asp?year=2011)

Table 4.15 presents above provides a summary of the socio-economic and demographics characteristics of the fathers, as reported by mothers. The mean (SD) age of Fathers was

36.93(±9.27) years. Twenty-two percent of the fathers had no formal education, 30% had a primary school education, 41.6%-secondary school education, and 6.4%-tertiary education. Fathers were mostly self- employed; (11.5% were Artisans, 53.6%-farmers, 29.3%-trading) 5.0%-Civil servants, 0.7% were unemployed. 17.2% of fathers had income above ₦10,000 a month, and 76.1% of the mothers did not know how much their spouses (fathers) earned.

Twenty percent of the fathers provided no form of child support to their spouses, 80% provided support ranging from provision of household upkeep money, assisting in feeding the baby, fetching water for the household, and carrying the child. Using Chi-square no relationship was observed between fathers' level of education and child's immunisation status $\chi^2(1) = 1.311, p=0.15$.

4.2.2 Mothers rating of fathers' involvement in CSIs

4.2.2.1 Exclusive breastfeeding

Mothers rated their husbands (fathers) as being supportive or un-supportive to them in practicing exclusive breastfeeding. Overall, 27% of mothers rated their husbands as being supportive of the practice of exclusive breastfeeding. There was no significant association between mothers' rating of fathers' to be either supportive or unsupportive of exclusive breastfeeding and the study groups. Table 4.16 below shows mothers rating of fathers in the three study groups.

Table 4.16 Mothers rating of spousal support in exclusive breastfeeding

Mothers rating	N=160 EG n(%)	N=203 MSSG n(%)	N=34 CG n(%)	Total
Supportive	39(24.4)	63(31.0)	6(17.6)	108(27.2)
Non-supportive	121(75.6)	140(69.0)	28(82.4)	289(72.8)
Total	160(40.3)	203(51.1)	34(8.6)	397(100.0)

$\chi^2=3.719, p=0.15$

4.2.2.2 Child immunisation

Table 4.17 Mothers rating of spousal support in child immunisation

	N=179	N=212	N=47	
Mothers rating	EG n(%)	MSSG n(%)	CG n(%)	Total
Supportive	135(75.4)	191(90.1)	44(93.6)	370(84.5)
Non-supportive	44(24.6)	21(9.9)	3(6.4)	68(15.5)
Total	179(40.9)	212(48.4)	47(10.7)	438(100.0)

$\chi^2=19.293$, $p=0.00$

Overall, 84.5% of fathers were rated by mothers to be supportive of child immunisation as shown in Table 4.17. Fathers who were rated as unsupportive of child immunisation by mothers were 15.5%. The association between mothers rating of fathers support and non-support for child immunisation and the study groups was significant at $p=0.00$.

4.2.2.3 Contraceptive use

Table 4.18 Mothers rating of spousal support in contraceptive use

	N=163	N=202	N=37	
Mothers rating	EG n(%)	MSSG n(%)	CG n(%)	Total
Supportive	30(18.4)	47(23.3)	8(21.6)	85(21.1)
Non-supportive	133(81.6)	155(76.7)	29(78.4)	317((78.9)
Total	163(40.5)	202(50.3)	37(9.2)	402(100.0)

$\chi^2=1.285$, $p=0.52$

Overall, 79% of mothers reported that their husbands (fathers) were not supportive of their use of contraceptives, as shown in Table 4.18. There was no significant association between mothers' rating of their spouses support and study groups.

4.2.3 Qualitative data results

This section of results centres on focus group discussions with fathers in the study communities. The objective was to determine fathers' involvement in mothers' use of CSIs.

4.2.3.1 Characteristics of FGD discussants

Figure 4.19 presents the characteristics of fathers who were discussants in the FGDs. All the fathers were married and living with their wives. Overall, mean age was 36.6 years. Eighteen percent had no formal education, and 3.0% had a tertiary education.

Table 4.19. Characteristics of fathers focus group discussants

Characteristics	N= 100 All Group	N= 40 EG n(%)	N=36 MSSG n(%)	N=24 CG n(%)
Mean age (SD)	36.6±7.6	35.3±7.2	35±6.2	40.9±9.3
Religion				
Christianity	58(58.0)	24(60.0)	20(55.6)	14(58.3)
Islam	42(42.0)	16(40.0)	16(44.4)	10(41.7)
Occupation				
Farmer	48(48.0)	21(52.5)	13(36.1)	14(58.3)
Trading	33(33.0)	12(30.0)	13(36.1)	8(33.3)
Artisan	13(13.0)	4(10.0)	7(19.4)	2(8.3)
Civil servant	5(5.0)	3(7.5)	2(5.6)	0(0.0)
Not Employed	1(1.0)	0(0.0)	1(2.8)	0(0.0)
Education				
No formal education	18(18.0)	10(25.0)	5(13.9)	3(12.5)
Primary education	30(30.0)	13(32.5)	8(22.2)	9(37.5)
Secondary education	49(49.0)	16(40.0)	22(61.1)	11(45.8)
Tertiary education	3(3.0)	1(2.5)	1(2.8)	1(4.2)

* Values are mean (SD)

4.2.3.2 Findings from fathers focus group discussions

Three pre-determined themes emerged from the analysis of the transcript: exclusive breastfeeding, immunisation, and contraceptive use. Results from these three themes are to be mirrored against result of mothers rating of fathers support in these three broad themes. Furthermore, response counts from the log book were used to buttress the similarities and difference in fathers' feedback.

In addition, some interesting sub-theme also emerged from the analysis, agricultural production, children's' education and decision making. The sub-theme on agricultural production was integrated into exclusive breastfeeding, children's education into contraceptive use and decision making into child immunisation. Results of the three main themes will be presented and discussed, and relating the finding to the sub-themes.

4.2.3.3 Fathers support towards exclusive breastfeeding

Fathers unanimously reported not to have ever discussed the need for exclusive breastfeeding. The concept of exclusive breastfeeding was unheard of, strange and very unwelcoming to fathers in the FDGs. Explaining the concept to fathers, prompted the response from only one of the fathers, who said he must have heard of it, but was unsure what it meant. Father 7, from group 2 EG said...

I first heard about exclusive breastfeeding 5 years ago, but I did not know what it meant, and none of my wives have ever discussed it with me.

The explanation of the concept of exclusive breastfeeding generated strong expressions from fathers as shown by the following quotes:

Why would my wife not give water to the child? My mother gave me water to drink...I am strong and healthy, so my children must drink water too. Father 1, from group 1CG

Mothers just have to give water to the child, to help with hiccups. Father 3, from group 2 MSSG

In fact not only water, we give our children cooked herbs to drink and educated people come from the city to get the herbs for their children also.' Father 2, from group 1EG

What time will the woman have to do others things if she breastfeed exclusively? This is a foreign concept that is contradictory to our culture and customs. Father 9 from group 2 CG

These feedbacks from fathers on exclusive breastfeeding, could impact negatively on mothers decision to breast feed exclusively. Some fathers noted that if mothers were to practice exclusive breastfeeding, mothers will require adequate nutrition. They believed that the practice required care, attention and good nutrition, and due to their living standard could not afford to provide their wives with such 'luxury'. Father 8 from group 2 EG words were:

It is difficult for mothers to breast feed exclusively because most of the mothers do not eat well, and it requires a well-nourished mother to practice exclusive breastfeeding.

This response from Father 8 from group 2 EG, was interjected by father 10 from the same group:

We do not have stems, seeds and agricultural inputs to plant, hence our yields are reduced, and reducing how much we can make from our sales. The money made at the end of the day is not enough for us to cater for our children and wives appropriately resulting in their poor nutritional status. So how can our wives be well nourished enough to breast feed exclusively?

This father's response brought into the discourse the challenges of the fathers in their occupation (farming) and how agricultural inputs have stalled agricultural outputs. Interesting, this feedback was confirmed by another father- father 6 from group 2 MSSG.

The challenges faced by fathers in our community is from the fact that since their main occupation is farming, they do not have alternative money source, and there are no access

markets to sell their produce, they do not generate enough to provide for other household needs of the household.

None of the fathers reported to have helped their wives with household chores to create or free up time for mothers to breastfeed the child. Fathers considered their roles in the household to be sending the children to school, providing money for feeding, clothing and shelter.

Most fathers were of the opinion that breastfeeding was the sole responsibility of mothers (wives), and regarded it as their God-given roles. Only 11% of the fathers have ever promoted their wives to breast feeding their child, and this action was only taken by fathers when they notice that the children have been crying for a while unattended too.

4.2.3.4 Fathers support towards child immunisation

The second theme was on child immunisation which was well-received by fathers. The acceptance of the uptake of immunisation by children was expressed more in the positive than in the negative by fathers. Fathers were in agreement in all the discussion groups that immunisation was important for the health and wellbeing of the children. Some fathers reported to have taken their children either to the health center to be vaccinated or assisted their wives in presenting the children to health workers on a door to door immunisation. One of the respondents- Father 9 group1 from MSSG affirmed his support for immunisation.

When our wives are busy, we do take the children for immunisation ourselves at the health centres or attend to the people who come for door-to-door immunisation. Father 9 group1 from MSSG

An interesting phenomenon emanating from the discussion with fathers on immunisation was the request by fathers to be informed of the immunisation days as declared by the health authorities. Fathers perceived that it was their responsibility to provide their wives with information on immunisation days, and about 60% of the fathers reported to have prompted their wives to take the children for immunisation.

However there was a point of divergent views by fathers on the theme of child immunisation support to mothers. Twenty-five percent of all the fathers were not in support of immunisation using injections. They strongly condemned this process of immunisation, calling on reviews from the government.

'We can only allow our wives to take the children for immunisation, if the immunisation is non-injection.' Father 5 group 1 from EG

'Some of the people the government uses for immunisation services are not trained health workers, if we allow them to inject our children, it may have negative consequences on the child, such as making him crippled, if the injection goes to the wrong nerve.' Father 12 group 2 from CG

Therefore, although fathers wanted to be part of the communication channels to their wives on immunisation, it was based on their desire to have the final decision on the choice of immunisation. Overall, fathers' perception of immunisation was that of joint responsibility but not that of joint decision making.

4.2.3.3.3 Fathers support towards contraceptive use

Contraceptive use was the third theme discussed by fathers. It was evident from fathers' feedback that communication on family size, planning for pregnancy was not priority topic for discussion fathers. None of the fathers had ever discussed contraceptive use with their wives or have considered the issue worth discussing. Similar none of the fathers was supporting or encouraging wives to use any method of contraception. In general, 65% of all the fathers had a negative notion towards contraceptive use by their wives.

'I have three daughters, I don't have a son, and I want to have a son...Somebody like me cannot stop having children. I need to continue to try until I have a male child.' Father 4, group 1 EG

'Some people are born as only child, how do you expect them to do family planning? They must give birth to all the children their parents could not have.' Father 4, group 2 CG

'It is good to have many children, it is this HIV that has spoiled everything...I cannot leave my home to date another woman, because I am afraid to catch HIV, so I keep having sex with my wife and she keeps getting pregnant.' Father 6, group 2 CG

Twenty percent of the fathers agreed to have used a form of contraception, and their contraceptive choice was the male condom. A minor group of fathers -35% were concerned and discussed the added value of contraceptive use. It was not clear from these fathers discussion which method of contraception to be used. Their feedback was more channelled towards the need to plan for pregnancies and be prepared to cater for the children when they are born, than it was centred on the need to adopt a long acting method of family planning by their wives.

I was the only surviving child out of the 22 children my mother gave birth to, I don't want my wife to go through what my mother went having 22 children. Father 6 from group 4 EG
It is good to have just three children and then use family planning. Father 8, group 2 MSSG

It is important our wives use family planning because we are not dogs that will be giving birth to children every month, so as human beings we need to reduce the number of children that we are having. Father 1, group2, MSSG

Fathers linked the use of contraceptives to the provision of education for their children.

I am worried about my children's education. The standard of schooling is falling every day and I don't have money to send my children to a private school. Father 7 from group 2 CG

But having so many children will hinder one's ability to give them quality education, but I must add that if one has five children that is okay. Father 9 from group 2 EG

4.3 Determine the effect of peer education on the use of child survival interventions by mothers

Table 4.20. Age-group of children at intervention

Age months	N= 150	N=135	N=95	Total
	EG n (%)	MSSG n (%)	CG n (%)	
0.0-5.9	69(46.0)	33(24.4)	27(28.4)	129(33.9)
6.0-11.9	30(20.0)	48(35.6)	19(20.0)	97(25.5)
12.0-17.9	24(16.0)	25(18.5)	17(17.9)	66(17.4)
18.0-23.9	17(11.3)	15(11.1)	9(9.5)	41(10.8)
24.0-29.9	6(4.0)	8(5.9)	17(17.9)	31(8.2)
30.0-35.9	4(2.7)	6(4.4)	6(6.3)	16(4.2)
Mean (SD)	9.56±8.1	11.94±8.0	13.66±9.7	11.47±8.66

The age-group distribution of children at the intervention phase is shown on Table 4.20. Overall, mean (SD) age of children was 11.47±8.66 months. The mean (SD) age of children in EG was 9.56± 8.1 months, 11.94± 8.0 months in the MSSG, and 13.66± 9.7 in CG. The ages group of the children showed significant association across the three study groups ($\chi^2=36.512$, $p= 0.00$), using a Chi-square test. Thirty-four percent of the children were below 6 months and 4.2% between 30.0-35.9 months. Forty-nine percent of the children were males, and all the children were breastfed by mothers.

Table 4. 21. Comparing mothers mean practice scores before and after intervention

Variable	Group	Baseline (Mean±SD)	Post intervention (Mean±SD)	t	P
CSIs Practice	EG	7.6±3.1	9.8±4.9	-4.22	<0.00
	MSSG	8.3±3.2	7.91±3.2	0.35	>0.00
	CG	8.0±3.0	4.2±3.6	5.77	<0.00

At baseline mothers mean (SD) practice score in the EG was 7.6±3.1, and 9.8±4.9 at post intervention. Using a paired sample T-test, a statistically significant positive difference was observed between mothers practice score at baseline and at post intervention, $t(130) = -4.22, p=0.00$. Similarly, at baseline mothers mean (SD) practice score in the MSSG was 8.3±3.2 and 7.91±3.2 at post intervention. Using a paired sample T-test, no statistically significant difference was observed between mothers practice score at baseline and at post intervention $t(134) = .358, p=0.72$.

In the CG, at baseline, mothers' scores were 8.0±3.0, and 4.2±3.6 at post intervention. A paired T-test showed a statistically significant negative difference in the pre and post-intervention practice scores of mothers; $t(48) = 5.77, p=0.00$ in the CG. In overall mothers mean practice scores in EG increased by 2.1 marks; mothers mean practice score in MSSG decreased by 0.14 marks and mothers in the CG decreased by 3.8 marks.

Table 4.22. Exclusive breastfeeding rate among mothers in the study groups

Month	EG	MSSG	CG
Month 1	19 of 69(27.5)	19 of 33(57.6)	6 of 27(22.2)
Month 6	6 of 17(35.3)	1 of 3(33.3)	0 of 1(0)

At the 6th month, percentage of mothers still breastfeeding exclusively was not significantly different between EG (35.3%) and MSSG (33.0%). A higher number of mothers in the EG were consistent in the practice of exclusive breastfeeding than in the MSSG.

Table 4.23. Children who had diarrhoea and treatment/actions taken by their mothers

Time points	EG n(%)	MSSG n(%)	CG n(%)	χ^2	p
Month 1					
ORS, SSS	13(8.7)	6(4.4)	6(6.3)		
Antibiotics	8(5.3)	9(6.7)	5(5.3)		
PHC	0(0.0)	0(0.0)	1(1.1)	10.465	0.23
Not treated	4(2.7)	6(4.4)	8(8.4)		
Did not occur	125(83.3)	114(84.4)	75(78.9)		
Month 6					
ORS, SSS	7(5.2)	13(9.8)	8(8.6)		
Antibiotics	1(0.7)	7(5.3)	12(12.9)		
Herbal medicine	0(0.0)	0(0.0)	2(2.2)	33.56	0.00
Not treated	0(0.0)	8(6.1)	3(3.2)		
Did not occur	126(94)	104(78.8)	68(73.1)		
Month 9					
ORS, SSS	3(3.7)	9(7.1)	5(5.6)		
Antibiotics	0(0.0)	7(5.5)	7(7.9)		
Herbal medicine	0(0.0)	1(0.8)	0(0.0)	19.537	0.03
PHC	0(0.0)	0(0.0)	3(3.4)		
Not treated	0(0.0)	4(3.1)	3(3.4)		
Did not occur	79(96.3)	106(83.5)	71(79.8)		
Month 12					
ORS, SSS	6(10.2)	8(13.8)	4(14.0)		
Antibiotics	0(0.0)	19(32.8)	9(31.0)		
Herbal medicine	0(0.0)	1(1.7)	0(0.0)	29.666	0.00
Not treated	0(0.0)	8(13.8)	3(10.0)		
Did not occur	53(89.8)	22(37.9)	13(45.0)		

Table 4.24. Vaccination status of children

*Vaccination status	EG n (%)	MSSG n (%)	CG n (%)	χ^2	p
Month 1					
No vaccination	49(32.7)	2(1.5)	15(15.8)	112.565	0.00
Not completed	93(63.0)	127(94.1)	75(78.9)		
Completed	8(5.3)	6(4.4)	5(5.3)		
N	150	135	95		
Month 6					
No vaccination	1(0.8)	1(0.8)	11(12.1)	131.809	0.00
Not completed	122(91.0)	120(90.9)	73(80.2)		
Completed	11(8.2)	11(8.3)	7(7.7)		
N	134	132	91		
Month 9					
No vaccination	0(0.0)	1(0.8)	11(12.6)	122.67	0.00
Not completed	67(81.7)	92(73.0)	67(77.0)		
Completed	15(18.3)	33(26.2)	9(10.4)		
N	82	126	87		
Month 12					
No vaccination	0(0.0)	0(0.0)	4(13.8)	55.953	0.00
Not completed	43(71.2)	21(36.2)	15(51.7)		
Completed	17(28.8)	37(63.8)	10(34.5)		
N	59	58	29		

* **No vaccination**-when child has not received any of the recommended vaccines

Not completed- when child has received at least one of the other recommended vaccines as appropriate for the child's age, but the mother had defaulted in some of the necessary vaccines

Complete –when the child has received the recommended vaccines as appropriate for the child's age.

4.4 Evaluate the use of child survival interventions on the nutritional outcomes of children 0-36months

Table 4.25. Mean(SD) of weight, height and ages of children across time points

		EG	MSSG	CG	p
Month 1	W ₁ (kg)	6.87(±2.37)	7.41(±2.41)	7.74(±2.53)	0.023
	H ₁ (cm)	63.15(±11.77)	66.60(±7.69)	67.03(±8.45)	0.002
	A ₁ (Mo)	9.56(±8.18)	11.95(±8.00)	13.79(±9.68)	0.001
	N	150	135	95	
Month 6	W ₆ (kg)	10.11(±2.40)	9.98(±2.2)	9.97(±2.46)	0.074
	H ₆ (cm)	70.61(±9.39)	70.79(±5.78)	71.53(±7.06)	0.656
	A ₆ (Mo)	15.57(±8.19)	16.59(±7.51)	17.95(±8.94)	0.102
	N	134	132	91	
Month 9	W ₉ (kg)	11.96(±2.07)	10.30(±1.82)	10.73(±2.15)	0.000
	H ₉ (cm)	74.83(±7.74)	72.37(±4.87)	72.84(±6.08)	0.016
	A ₉ (Mo)	18.42(±7.05)	18.82(±6.66)	20.49(±8.46)	0.140
	N	82	126	87	
Month 12	W ₁₂ (kg)	13.28(±1.62)	12.16(±1.20)	11.95(±1.80)	0.000
	H ₁₂ (cm)	76.03(±6.38)	75.56(±4.58)	74.52(±4.79)	0.473
	A ₁₂ (Mo)	20.60(±5.15)	23.86(±5.19)	23.31(±5.93)	0.003
	N	59	58	29	

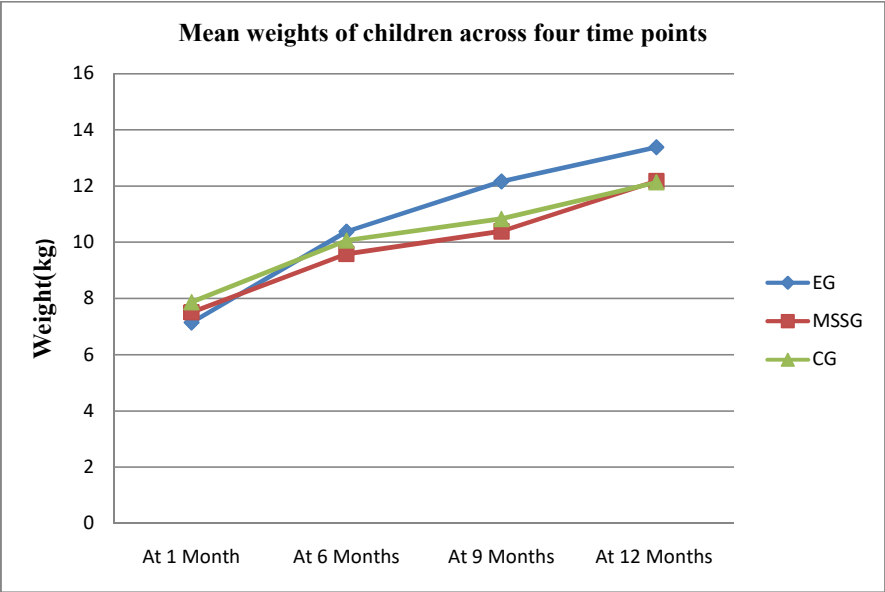


Figure 4.4 Mean weight of children across four time points at intervention

Table 4.26. Wasting among children across four time points

Weight/height z-score ¹	EG	MSSG	CG	p
WHZ ₁	.483(±2.78)	-.393(±2.33)	-.102(±2.26)	0.013
n	145	134	94	
WHZ ₆	2.30(±2.21)	1.15(±1.94)	1.53(±1.66)	0.000
n	134	132	90	
WHZ ₉	2.95(±2.22)	1.69(±1.60)	1.99(±1.50)	0.000
n	82	126	87	
WHZ ₁₂	3.82(±1.80)	2.78(±1.16)	2.77(±1.16)	0.000
n	59	58	29	

¹ Values are Mean±SD

At month 1, a one-way ANOVA showed a statistically significant difference between the groups; ($F(2,1)=4.420$, $p=0.01$). A Tukey post hoc test revealed statistically significant difference between the mean WHZ of EG and WHZ of MSSG ($p=0.01$), no significant difference was observed between WHZ of EG and CG, ($p=0.18$). Also no significant difference was observed between WHZ of MSSG and CG, ($p=0.66$)

At month 6, a one-way ANOVA showed a statistically significant difference between the groups; ($F(2,1)=11.619$, $p=0.00$). A Tukey post hoc test revealed statistically significant difference between the mean WHZ of EG and WHZ of MSSG ($p=0.00$), significant difference was observed between WHZ of EG and CG, ($p=0.01$). However no significant difference was observed between WHZ of MSSG and CG, ($p=0.33$)

At month 9, a one-way ANOVA showed a statistically significant difference between the groups; ($F(2,1)=12.992$, $p=0.00$). A Tukey post hoc test revealed statistically significant difference between the mean WHZ of EG and WHZ of MSSG ($p=0.00$), significant difference was observed between WHZ of EG and CG, ($p=0.00$), no significant difference was observed between WHZ of MSSG and CG, ($p=0.44$)

At month 12, a one-way ANOVA showed a statistically significant difference between the groups; ($F(2,1)=8.875$, $p=0.00$). A Tukey post hoc test revealed statistically significant difference between the mean WHZ of EG and WHZ of MSSG ($p=0.00$), no significant difference was observed between WHZ of EG and CG, ($p=0.06$). Also no significant difference was observed between WHZ of MSSG and CG, ($p=1.000$).

Table 4.27. Stunting among children across four time points

Height/Age z- scores ¹	EG	MSSG	CG	p
HAZ ₁	-2.56(±1.87)	-2.54(±1.80)	-2.77(±1.90)	0.594
n	145	134	94	
HAZ ₆	-2.81(±1.85)	-2.99(±1.44)	-2.98(±1.45)	0.602
n	134	132	90	
HAZ ₉	-2.32(±1.62)	-3.12(±1.35)	-3.35(±1.31)	0.000
n	82	126	87	
HAZ ₁₂	-2.66(±1.76)	-3.52(±1.45)	-3.72(±1.00)	0.002
n	59	58	29	

¹ Values are Mean ± SD

There were no observed significant differences in the mean HAZ between the groups at the first and 6th month time points.

However, at month 9, a one-way ANOVA showed a statistically significant difference between the groups; ($F(2,1)=11.702, p=0.00$) A Tukey post hoc test revealed a statistically significant difference between the mean HAZ of EG and HAZ of MSSG ($p=0.00$), a statistical significant difference was observed between mean HAZ of EG and mean HAZ of CG, ($p=0.00$). No significant difference was observed between the mean HAZ of MSSG and CG, ($p=0.69$)

At month 12, a one-way ANOVA showed a statistically significant difference between the groups; ($F(2,1)=6.662, p=0.00$) A Tukey post hoc test revealed a statistically significant difference between the mean HAZ of EG and HAZ of MSSG ($p=0.00$), a statistical significant difference was observed between mean HAZ of EG and mean HAZ of CG, ($p=0.00$). No significant difference was observed between the mean HAZ of MSSG and CG, ($p=0.83$)

Table 4.28. Underweight among children across four time points

Weight/Age z-scores ¹	EG	MSSG	CG	p
WAZ ₁	-1.35(±1.69)	-1.80(±1.52)	-1.72(±1.51)	0.042
n	145	134	94	
WAZ ₆	-.049(±1.25)	-.787(±1.30)	-.538(±1.25)	0.000
n	134	132	90	
WAZ ₉	.897(±1.10)	-.412(±1.04)	-.317(±1.09)	0.000
n	82	126	87	
WAZ ₁₂	1.36(±.98)	.167(±.74)	.151(±.81)	0.000
n	59	58	29	

¹ Value are Mean±SD

At month one, a one-way ANOVA showed a statistically significant difference between the groups; ($F(2,1)=3.193$, $p=0.04$). A Tukey post hoc test revealed a statistically significant difference between the mean WAZ of EG and WAZ of MSSG ($p=0.04$), no statistical significant difference was observed between mean WAZ of EG and mean WAZ of CG, ($p=0.17$). No significant difference was observed between the mean WAZ of MSSG and CG, ($p=0.92$)

At 6th month, a one-way ANOVA showed a statistically significant difference between the groups; ($F(2,1)=11.501$, $p=0.00$). A Tukey post hoc test revealed a statistically significant difference between the mean WAZ of EG and WAZ of MSSG ($p=0.00$), a statistical significant difference was observed between mean WAZ of EG and mean WAZ of CG, ($p=0.01$). No significant difference was observed between the mean WAZ of MSSG and CG, ($p=0.32$)

At 9th month, a one-way ANOVA showed a statistically significant difference between the groups; ($F(2,1)=40.925$, $p=0.00$). A Tukey post hoc test revealed a statistically significant difference between the mean WAZ of EG and WAZ of MSSG ($p=0.00$), a statistical significant difference was observed between mean WAZ of EG and mean WAZ of CG, ($p=0.00$). No significant difference was observed between the mean WAZ of MSSG and CG, ($p=0.80$).

At 12th month, a one-way ANOVA showed a statistically significant difference between the groups; ($F(2,1)=33.93$, $p=0.00$). A Tukey post hoc test revealed a statistically significant difference between the mean WAZ of EG and WAZ of MSSG ($p=0.00$), a statistical significant difference was observed between mean WAZ of EG and mean WAZ of CG, ($p=0.00$). No significant difference was observed between the mean WAZ of MSSG and CG, ($p=0.99$).

4.4.1 Trend line of children's nutritional status across four time points

4.4.1.1 Trend line of mean weight-for-height/length z-scores

A trend line was used as an analytical tool in conjunction with a scatter plot to evaluate if there was a relationship between the four time points and children's mean nutritional indices z-scores in the three groups. Figure 4.5 shows a positive correlation between mean weight for height z-scores and time point pattern in the three study groups. The three slopes have an upward trend line. This signifies a positive slope which indicates an increase in the mean z-score for WHZ with progression in time. The EG slope had the uppermost trend line. The trend lines for MSSG and CG show a slightly down trend compared to that for EG. The implication is that though WH z-scores of all children was improving, children in the EG had a faster progression with time.

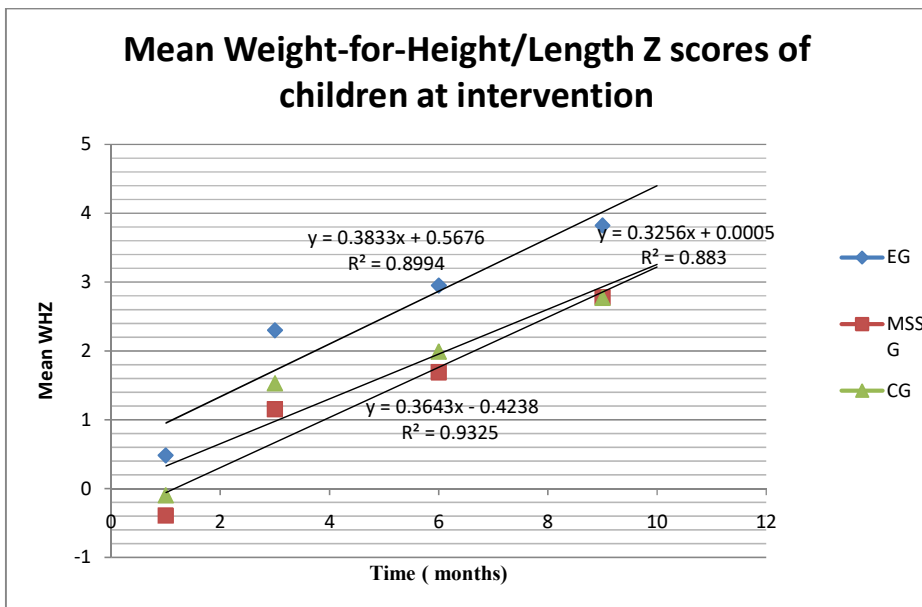


Figure 4.5 Mean weight- for-height/length z scores of children at intervention

4.4.1.2 Trend line of mean height/length-for-age z-scores

Figure 4.6 presents the trend line association between the mean height/length- for- age z- scores across four time points of measure. The three slopes show acts of resistance to positive change in relationship with progression in time. The slopes of MSSG and CG illustrate a down trend line which is negative. The trend line for EG, continues to staggers negatively, but maintains a fixed relationship in progression with time.

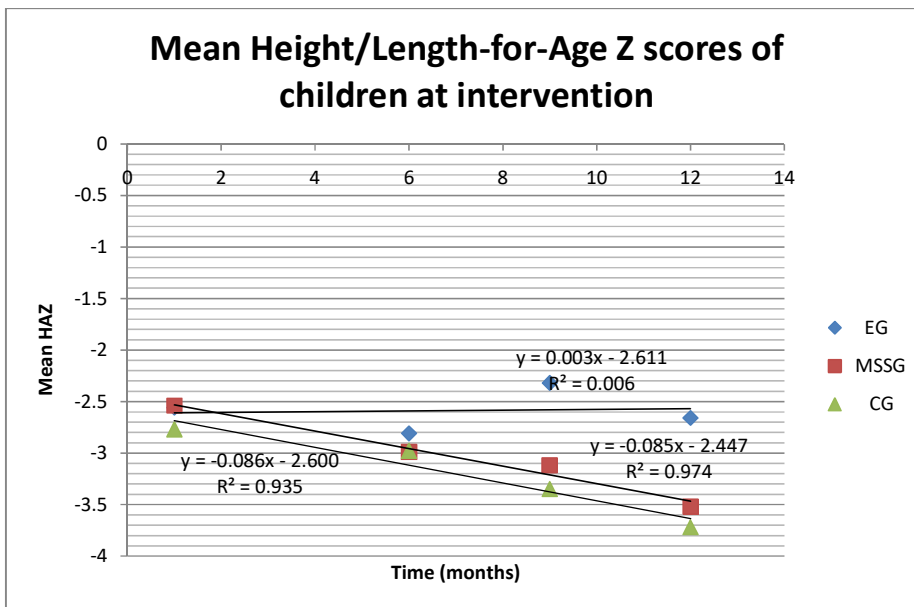


Figure 4.6 Mean height/length- for-age z scores of children at intervention

4.4.1.3 Trend line of mean weight-for-age z-scores

The trend line association between the mean weight for age z-scores across four time points of measure is presented in Figure 4.7. The figure shows the fastest transition time from negative mean weight-for-age z-scores to be in the EG. The MSSG and CG transitioned into a positive upward trend, however, at a slower rate compared to the EG.

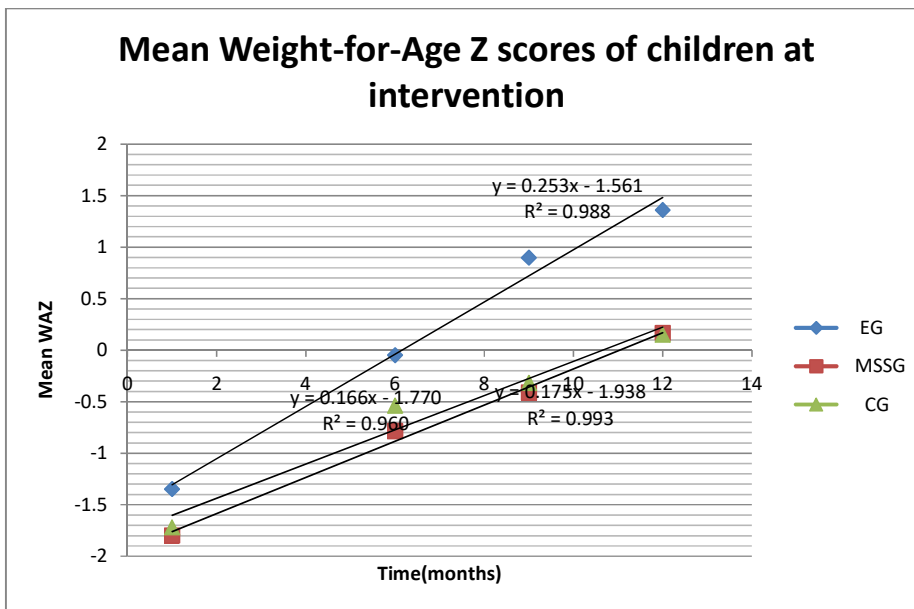


Figure 4.7 Mean weight-for-age z scores of children at intervention

Table 4.29. Number of children wasted/not wasted at intervention

	Nutritional Status Index	EG n(%)	MSSG n(%)	CG n(%)
Month 1	Wasted	28(19.3)	34(25.4)	18(19.1)
	Not wasted	117(80.7)	100(74.6)	76(80.9)
Month 6	Wasted	12(9.0)	18(13.6)	15(16.7)
	Not wasted	122(91.0)	114(86.4)	75(83.3)
Month 9	Wasted	0(0.0)	7(5.6)	5(5.7)
	Not wasted	82(100)	119(94.4)	82(94.3)
Month 12	Wasted	0(0.0)	0(0.0)	0(0.0)
	Not wasted	59(100)	58(100)	29(100)

Table 4.29 shows the percentages of children who were nutritionally wasted across the four time points. At the 12th month, none of the children in the three study groups was wasted nutritionally. It is noteworthy that at the 9th month, none of the children in the EG was nutritionally wasted, whilst 5.6% and 5.7% of the children in the MSSG and CG respectively had z-scores less than -2 SD.

Table 4.30. Number of children stunted /not stunted at intervention

	Nutritional Status Index	EG n(%)	MSSG n(%)	CG n(%)
Month 1	Stunted	75(51.7)	82(61.2)	64(68.1)
	Not stunted	70(48.3)	52(38.8)	30(31.9)
Month 6	Stunted	70(52.2)	95(72.0)	66(73.3)
	Not stunted	64(47.8)	37(28.0)	23(25.6)
Month 9	Stunted	38(46.3)	90(71.4)	73(83.9)
	Not stunted	44(53.7)	36(28.6)	14(16.1)
Month 12	Stunted	34(57.6)	50(86.2)	25(86.2)
	Not stunted	25(42.4)	8(13.8)	4(13.8)

The percentages of children stunted in the three study groups across the four time points are presented in Table 4.30. Reduction in stunting was fastest in the EG group, compared to the MSSG and CG. At the 12th month, 42% of children in the EG were not stunted, compared to 13.8% in both the MSSG and CG.

Table 4.31. Number of children underweight/not underweight at intervention

	Nutritional Status Index	EG n(%)	MSSG n(%)	CG n(%)
Month 1	Underweight	43(29.7)	52(38.8)	31(33.0)
	Not underweight	102(70.3)	82(61.2)	63(67.0)
Month 6	Underweight	6(4.5)	14(10.6)	9(10.0)
	Not underweight	128(95.5)	118(89.4)	81(90.0)
Month 9	Underweight	0(0.0)	10(7.9)	5(5.7)
	Not underweight	82(100%)	116(92.1)	82(94.3)
Month 12	Underweight	0(0.0)	0(0.0)	0(0.0)
	Not underweight	59(100.0)	58(100.0)	29(100.0)

Table 4.31 shows the percentages of children underweight across the three study groups. At the 12th month, none of the children in the three study groups was underweight, showing a similar pattern with wasting.

4.5 Qualitative data results

4.5.1 Mothers knowledge and practice of CSIs

The method of collection and analysis of the qualitative data have been described under methodology in Chapter three.

4.5.2 Characteristics of FGD discussants

Figure 4.32 presents the characteristic of mothers who were discussants in the FGDs. All the mothers were married and living with their husbands. Overall, mean age was 27.8 years. Twenty-eight percent had no formal education, and 10.0% had a tertiary education.

Table 4. 32 Characteristics of mothers focus group discussants

Characteristics	N= 72 All Group n(%)	N= 30 EG n (%)	N=24 MSSG n (%)	N=18 CG n (%)
Mean age (SD)*	27.8±5.8	27.0±5.8	26.8±5.7	30.5±5.4
Religion				
Christianity	36(50.0)	12(40.0)	15(62.5)	9(50.0)
Islam	36(50.0)	18(60.0)	9(37.5)	9(50.0)
Occupation				
Not employed	6(8.3)	4(13.3)	1(4.2)	1(5.6)
Civil servants	4(5.6)	1(3.33)	2(8.3)	1(5.6)
Traders	27(37.5)	10(33.3)	12(50.0)	5(27.8)
Artisans	15(20.8)	6(20.0)	4(16.7)	5(27.8)
Farmers	20(27.8)	9(30.0)	5(20.8)	6(33.3)
Education				
No formal education	20(27.8)	7(23.3)	4(16.7)	9(50.0)
Primary education	22(30.6)	11(36.7)	4(16.7)	7(38.9)
Secondary education	23(31.9)	10(33.3)	11(45.8)	2(11.1)
Tertiary education	7(9.7)	2(6.7)	5(20.8)	0(0.0)

* Values are mean (SD)

4.5.3 Findings from mothers focus group discussions

The main focus of the qualitative FGDs was to complement information gathered through administered questionnaires to mothers with children 0-36months in the study locations. Fives themes emerged from the analysis of the transcript: breastfeeding and breastfeeding initiation; complementary feeding, common childhood illness, family planning, and utilisation of the primary health care centres. Some new sub-themes emerged; culture, place of child birth, and social capital. These new sub-themes were integrated into the broader research themes. In the discussion, some of these new sub-themes will be identified, discussed and linked to the study's research objectives.

4.5.3.1 Breastfeeding initiation and continued breastfeeding

(a) Culture

Culture emerged during the analysis of the transcripts as a new sub-theme, which was integrated into breastfeeding initiation and continued breastfeeding theme. Culture was identified as one of the significant factors driving the initial actions that follow the birth of children in all the communities. These initial actions are linked to the child's naming ceremony rites practiced differently in all the communities, yet having a common feature- the practice of giving water. Furthermore, some of the respondents (for example Mother 1, from group 2 MSSG and Mother 4, from group 1EG) feel the advent of modern religions have not change significantly the ceremony and rites performed on children after birth. As Mother 4, group 1EG expressed:

The child's parents will take the child to the river goddess and say they have come to give thanks to the goddess for giving them the child and have come to present the child to the goddess and then the water from the river is given to the child to drink. For those who are no longer traditionalist, it is a must to give the child water to drink from the household drinking pot to welcome the child.

Mother 1, from group 2 MSSG:

There is no child initiation conducted when a child is born in our community. We give water afterbirth before giving breastmilk, and the child continues to consume both liquid until the eight day which is the naming ceremony day

This statement shows the influence of culture on people in spite of their educational status, religious affiliations and social status. The practice of giving water to newborn resonated among mothers across the FGD groups. Only two of all the mothers said they were not practicing the act of water giving after birth or as a child naming rite.

(b) Breastfeeding Initiation

All mothers in the FGDs groups stressed the importance of breastfeeding, which they considered as the process of providing breastmilk to the child from the mother's breast. The mothers considered breastmilk as nature's way of providing care and food for the newborn. Everywoman can breastfeed and nothing should prevent that practice of breastfeeding. This was strongly expressed by Mother 7, from group 2 CG:

If the mother is not lactating as expected, herbs are cooked and given to her to drink so that she can lactate and the child will have enough breastmilk to drink.

The above quote is indicative of the beliefs, perception and attitude towards breastmilk, and added value to the infant. It further illustrates how traditional knowledge has provided support for mothers having challenges with lactation. However, mothers disagreed on when breastfeeding should commence. One of the discussants provided a description from her lineage when breastfeeding should start- Mother 6, from group 3, EG:

If the child is a boy, a chicken will be killed prepared and fed to the child's mother before breastfeeding commences. If the child is a girl, breastfeeding starts immediately without the need to prepare any meal.

In the words of Mother 4, from group 3 MSSG:

Breastfeeding can start at any time, as long as the child's mother has had a bath and the child given water to drink to welcome the child into the family.

The views of mother 6, from group 3, EG must be based on the assumption that the family will have either economic or physical access to chickens, otherwise when a male child is born, breastfeeding cannot be commenced by the mother in this family if they cannot afford a chicken. This led to discussions on giving colostrum to the newborn child. Mothers were divided over giving colostrum and the benefits of colostrum to the child. Mothers in support of giving colostrum to infants expressed their reasons as the thus:

Mother 5, from group 2, MSSG:

The yellowish milk is very good for the child, because it contains 'tonic' which makes the child grow.

Mother 7, from group 3 EG:

I do give my child the first milk that comes out from my breast, although I do not know if it has any special benefits, other than it being breastmilk.

Mothers not in support of giving infants colostrum; Mother 2 from group 1 CG expressed:

I never give the first milk that comes out; I give water until my breastmilk is white.

Mother 7 from group 3 EG

It looks dirty and thick.

The observation by mothers of colostrum as being thick and not having the white/milky colour for which breastmilk is known for, acts as a barrier to mothers offering their infants colostrum. One of the mothers; mother 5 from group 2, CG described colostrum in her own words:

It is like the first rain at the onset of the raining season, which nobody collects but allows to wash off the roofing sheets.

This mothers' analogy of colostrum with the first rains is an interesting phenomenon.

(c) Exclusive breastfeeding

Exclusive breastfeeding was not totally new term to the discussants. Overall, five mothers have not heard of exclusive breastfeeding among the mothers. First level discussions with respondents seemed a unanimous opposition towards exclusive breastfeeding based on culture and tradition. The quotes below are expressed by some of the respondents' why exclusive breastfeeding cannot be practice by mothers-

Water and breastmilk is the first food given to a child after birth. It is our tradition to do so. Mother 6, from group 1 CG

Our mothers gave water so we too must give water to our children. Mother 9, from group 2, MSSG

It is our tradition and custom to give water, water is a form of food. Mother 10, from group 1 EG

When the child is coughing or has hiccups, I have to give the child water to calm the child. Mother 6, from group 4, EG

Further probe revealed another group of mothers who reported to have been informed not to practice exclusive breastfeeding by the health service provider.

The nurse at the health center told us that if we practice exclusive breastfeeding, our children will be strong, beautiful and compassionate towards us. Mother 9 from group 2 MSSG

When I delivered at the health center the nurse told me to give water mixed with glucose to the child before breastfeeding. She did not talk to me about exclusive breastfeeding. Mother 8 from group 3 EG

However, further in-depth discussions proved that, culture was a merely being used to cover up for mothers' inability to practice exclusive breastfeeding. This is confirmed by the two expressions from mothers

It is very difficult to practice exclusive breastfeeding although I have been told of its benefits. When you give birth, you only have friends and family members caring for you only for the eight days before the naming ceremony. After the naming ceremony, you are left alone to cope with caring for the new born child and other household members...This is too much for me to do. Mother 1 from group 1 EG

Exclusive breastfeeding is difficult, so I simply give my child water to quench thirst, clam the baby and facilitate the baby to sleep. Mother 3 from 2 CG

I practice exclusive breastfeeding for the first three months, and then introduce the child to infant formula. Mother 4 from 1 MSSG

(d) Breastfeeding duration

Mothers across the three study groups unanimously agreed that duration of breastfeeding should be determined by the child's attainment of the milestone of walking. A greater number of mothers summarised breastfeeding duration in the following words:

We continue breastfeeding until we noticed that our children's feet are firm on the ground and they can walk without support for some appreciable distance.

4.5.3.2 Complementary feeding

Mothers differed on when to initiate complementary feeding. Most mothers agreed that children should be introduced to family meal between four and six months. Although some mothers claimed that nowadays the growth rate of some children is fast and so can be introduced to complementary feeding earlier than four months.

'The child will be introduced to adult food at 6months.' Mother 6 from group3 MSSG.

'We introduce the child to family food at 3 months.' Mother 6 from group 1 EG

Common foods used in initiating children into family meals were *Amala*(dry Yam/Cassava flour; *Dioscorea alata/Manihot esculenta*), *Ewedu* (*Corchorous Olitorius*) and Guinea corn gruel. Mothers' unanimously agreed that their children need to eat a variety of foods to grow well. However, mothers associated the inability to provide their children with mixed variety of food with the high poverty conditions in their households.

4.5.3.3 Common childhood illness and treatment provided

Overall, diarrhoea and malaria were most mentioned by mothers in their discussions as frequent illness affecting under-five children in the study communities. Discussing the causes and treatment for diarrhoea, divergent responses were provided by mothers on the cause and treatment of diarrhoea.

(a) Perceived causes of diarrhoea in children

Eating of sweet foods like mangoes, sugarcane, and oranges. Mother 8 from group 3 EG)

When the child eats too much. Mother 9 from group 1 MSSG

When the mother is still breastfeeding the child and gets pregnant, this could result in diarrhoea in the child'. Mother 4 from group 2 CG

Infections by germs in the stomach can cause diarrhoea. Mother 9 from group 1EG)

When the child is teething. Mother 9 from group 1 CG

'I don't know the cause of diarrhoea in my children. Currently my child is having diarrhoea.' Mother 7 from group 3 MSSG

Treatment offered for diarrhoea in children

We buy antibiotics such as flagyl, tetracycline and ampicox to stop the diarrhoea. Mother 10 from group 1 CG

We boil Guava leaves and give the children the boiled water to drink. (Mother 4 from group 4 EG

We prepare 'Omi eye' (literally translated as water of life) with sugar, salt and boiled water. Mother 7 from group 2 MSSG

We observe the child for a whole day, and if it continues, we will go to the patent medicine vendor. Mother 1 from group 1CG

(b) Immunisation

Majority of mothers were in complete agreement on the need for their children to be immunised from diseases that cause disabilities and also lead to death. It is noteworthy that immunisation as a theme feeds into the theme on utilisation of Primary health care services. Mother 3 from group 3 MSSG and Mother 8 from group 2 EG expressed their opinion:

*Immunisation is the only reason why I go to the health centre
Immunisation is the only time we get to hear health talks from the health center staff.*

In Mother 4 from group 1MSSG words:

Immunisation should be done from house to house rather than asking us mothers go to the health centres.

Although, some mothers reported that there was no added value of immunising their children. They tied it into the culture which is a sub-theme gathered under theme one. One respondent from the EG communities expressed this strongly

I don't give my child immunisation. Why should I? I was not immunised... I give them water that I collect from the church. Mother 10 from group 1 EG

Mothers also raised concerns over their husbands' refusing them to taking the children for injectable vaccination. Mother 8 from group 2 CG

My husband does not want me to give the children injectable immunisation, but I know I should. My sister said it is very important that I do.'

4.5.3.4 Family planning

Contraception use also known as family planning offers women protection from unintended and unplanned pregnancies. The mothers seemed knowledgeable about family planning, especially modern methods. This is confirmed by some expression made by mother 8 from group 3 EG

Family Planning is aimed at ensuring that one does not have too frequent births, so that we can care for the children we have given birth too, because too many children tend to poverty and family planning will help us keep looking beautiful.

Family Planning gives the mother rest for the present and the future. Mother 3 from group CG.

The failure rate of the traditional method is higher than that of modern methods. Mother 2 group 4 EG.

Some of our friends use it and claim it is good. Most of them are on injectable. Mother 7, from group 2CG

Discussions on the theme were very engaging and it was obvious mothers wanted to know more about family planning. However, there was an atmosphere of secrecy, as none of the mothers openly admitted to using any form of contraception. Mothers rather used 'our' instead of 'my' to avoid identifying with friends using contraceptives. It also shows that mothers do discuss contraceptive use with one another, and their preferred method. Mothers stated the following reasons why people were not adopting family planning in their communities.

Reasons why couples do not adopt the use of family planning as expressed by discussants

If one is born as an only child, the person will not support family planning as the parents will want him to have so many children that they could not have.

The use of family planning is associated with promiscuity and so husbands never encourage their wives to use it.

There have been cases of people we know who have used family planning but when they were ready to have children could not get pregnant

The safety of modern method was also questioned by the mothers and the rate at which fertility returns after discontinuation.

The reasons were climaxed by a personal experience from Mother 4 group 3 MSSG

My sister is a nurse she did family planning, and when she was ready to have children, she started having difficulty getting pregnant.

Discussing spousal support for contraceptive use with the mothers showed that their husbands were not in support of their use of contraception. This could possibly be why none of the mothers was bold enough to own up to be using contraception and the air of secrecy surrounding its discussions. Only one mother was bold to share the below- Mother 5 from group 2 MSSG:

'When I told my husband that I wanted to access contraception, he told me that he would not make the money available for me, that I could go ahead and use my own money to acquire it, and be ready to face the negative consequences that may arise from its use alone.'

4.5.3.5 Utilisation of primary health centre

This theme was integrated with two sub-themes; place of child birth and social capital. The discussion explored mothers' utilisation of health services provided in the health centre as a link to understanding mothers sources of information, interaction with service providers and uptake of immunisation for their children.

Respondents in all the FGD groups agreed and expressed their displeasure with the health service providers for not providing them with health information on diverse issues. Except when they visited the health centres when sick or during immunisation outreaches when health providers visit their communities to provide immunisation for the children. Two mothers recount their experiences. First is mother 2 from group 1 EG recounts why she is not pleased with the services provided in the health centre in her community.

There are no drugs in the health centre. Often when I visit the health center the nurse write drugs for us to go buy, so we decided to patronise private health providers. Some of the public health providers are so rude. If the health centre announces that there will be immunisation, then I go to the health centre. Otherwise I cannot remember when last I utilised the health centre

Another mother 5 from group 3 MSSG shares her experience

I took my child to the health center because the child's body was hot, and he was coughing. The service provider referred me to the Moniya PHC because she said my son was anaemic. She did not give me the description of how to get to the PHC in Moniya.

(a) Place of child birth

Mothers reiterated their desire to have their children born in the health facilities, but were constrained, and so have sought alternative outlets. Most mothers reported delivering at home with support from traditional birth attendants (TBA). The reasons are not farfetched, as mothers expressed clearly the context in a quote by Mother 1 from group 2 MSSG

I register at the health facility when I was pregnant, I collected the drugs and injections and attend the counselling classes, but when it was time for me to have my child, it was difficult for me to walk all the way to the health center and also there was no means of transportation to the health center so I had my child at home with the support of TBA.

I had my child at the health center, because it was in the afternoon on a week day. The center is only opened on week days. They only work between morning and afternoon and they are gone for remainder of the day. It is not opened on Sunday, I don't know what I would have done if I had given birth on a Sunday. Mother 9 from group 1 EG

'The health center provided me with care when I was pregnant, however I had my baby on Sunday and the health center does not open on a Sunday, so I had the child at home.' Mother 7 from group 2 CG

The traditional birth attendants charge a fee between ₦2500 and ₦3000 (16\$ and 19\$ USD) for each child delivery, as reported by a mother from one of the MSSG. This is expensive when compared to having the child in the health center for free. One of the mothers reported that if she was not having any form of complications that there was no need for her to go to the health centre to have her child. However, if one faces challenges during child birth, then the individual can go to the health facility for assistance.

Some of the mothers also commended the support being provided by some health service providers. This was strongly reiterated by Mother 2 from group 1 EG

The head nurse at the centre is so helpful, she wrote her number on the clinic wall, and ask us to call her at any time we need help. A particular case happened some months ago. We called the nurse at 3.30am that one of the women in the village was having a child, and she drove all the way from her house to take the delivery.'

This feedback from respondents under this theme is an indication that direct face-face interaction is vital in building trust, communication and confidence. This is essential in building bonds between service providers and their clients, a true case in this context. In the absence of this bond, it is almost impossible to communicate information necessary at changing behaviour, attitude and perceptions.

(b)Social capital

There is no agreed definition of social capital in literature. This is because of the possibility of social capital to create inequality and exclusion, which is against the fundamentals upon which the concept of the PHC is based. Having said that, reports from discussions with mothers showed a positive flip side of social capital which is built on cooperation, trust and reciprocity.

Mothers reported that there are no mothers support group in their communities, so they have learnt to use their social capital network. Mothers in dire need after child birth are supported by their friends, savings cooperative group members, age grade groups and they return the favours back when their friends also have a newborn. Also, mothers living with extended family members receive support from in-laws. Although some mothers mentioned that they were not being supported by extended family members.

CHAPTER FIVE

DISCUSSION

5.0 Mothers socio-demographic characteristics

The mothers in this study did not differ in socio-demographic characteristics. The mean age at first marriage obtained is similar to the finding of Adebowale *et al.*, (2012) in Southern Nigeria. The similarity in the age at first marriage across the three study groups could be linked to shared socio-cultural norms, values and history between the study groups. However, the age at first marriage observed in this study could have significant impact on fertility rate, frequent births, child morbidity and mortality, since it has been shown that women who get married early tend to have higher parity (Isiugo-Abanihe 2010; Kayode *et al.*, 2012). There was no difference in mothers' level of education although the MSSG had the highest number of mothers with tertiary level of education.

Three-fifths of mothers delivered their last child at places other than a health facility without a skilled birth attendant. The low utilisation of health facilities for child birth has become a trend in Nigeria. The Nigeria Demographic Health Survey shows that only a third of all births in Nigeria are delivered in health facilities (NPC and ICF Macro, 2014). Mothers' reasons for not delivering their children in health facilities in this study were: (i) mothers not having history of delivery complication in the past, (ii) negative provider attitude, (iii) time of day of child birth, (iv) affordability and quality of services rendered, and (v) proximity to place of residence. These reasons are consistent with findings from other studies within Nigeria by Idris *et al.*, (2013) in Giwa LGA in Kaduna State and Odetola (2015) in Ibadan. These findings differ from the finding by Tuan *et al.*, (2014) among rural Vietnam mothers, where there is a higher health facility utilisation for child delivery. Tuan *et al* ascribed the high health facility utilisation to the availability of strong health systems and high level of education of mothers in rural Vietnam. The social context of this study is different from the context in rural Vietnam

5.1. Mothers knowledge and practice of child survival interventions

This study assessed the knowledge and practice of CSIs among mothers across the three study groups at baseline. Although all mothers in this study breastfed their children, the rates of early initiation of breastfeeding, knowledge and practice of exclusive breastfeeding, initiation of complementary feeding were low when compared with previous reports from Nigeria and other parts of the developing world (Sanusi and Gbadamosi 2009; Akinremi and Samuel 2014; Cox *et al.*, 2015)

5.1.1 Initiation of breastfeeding

Early breastfeeding initiation rate in this study is similar to findings by Awi and Alikor (2006) in Port Harcourt, Awogbenja (2010) at Lafia LGA in Nasarawa state, and is consistent with the current rural prevalence of breastfeeding initiation in Nigeria (NPC and ICF Macro, 2014). However the rate observed in this study is lower than that reported by Ogunlesi (2010) in Ilesa and Okafor *et al.*, (2014) in Lagos, these higher rates could possibly be associated with the fact that the study locations were in an urban mega city and an infant welfare clinic designated as baby friendly respectively. Ogunlesi (2010) observed a significant positive relationship between children born in the health facility and mothers' early initiation of breastfeeding. Whileslightly below half of mothers in this study had delivered their children in health facilities, no significant association was found between child delivery in the health facility and early breastfeeding initiation. This difference in results could be associated with three factors as informed from this study. First, mothers may not have been assisted by personnel that had been trained in supporting initiation of breastfeeding. Secondly it could be a reflection of mothers' ignorance of appropriate time to initiate breastfeeding; indications of mothers' lack of awareness of the benefits of colostrum to the children. Colostrum is the initial yellowish and sticky milk produced from the mothers' breast from 37 weeks of gestation to about 7 days after delivery. Some mothers reported that they wait for the flow of the whitish milk before starting to breastfeed, thus delaying initiation. The discussions with mothers showed mothers were not in practice of feeding their neonates with colostrum. Lastly, mothers to be are misguided by health service providers to give a mixture of water and glucose to their child first, thus delaying breastfeeding initiation. The only factor shown in this study

to have a positive relationship with early breastfeeding initiation, is mother being in a marital union and living with their spouses. This finding is consistent with similar studies by Sika-Bridget (2010) in Cape Coast, Nyanga *et al.*, (2012) in Kenya and Örün *et al.*, (2010) in Tukey.

5.1.2 Exclusive breastfeeding

Exclusive breastfeeding rate reported in this study is lower than the findings by Agu and Agu (2011) among rural mothers in Umunya and Neni in Anambra, Sholeye *et al.*, (2015) in Sagamu, Sanusi *et al.*, (2016) in Enugu, and by Kumar *et al.*, (2011) in rural eastern Uttar Pradesh in India. The difference in rates in exclusive breastfeeding in this study and that by Agu and Agu could be ascribed to the fact that this study was community based and had a larger sample size than that of Agu and Agu which was at a tertiary health facility with a smaller sample size. Similarly, Sanusi and colleagues had participants with high awareness of breastfeeding than was observed in this study and Sholeye *et al* conducted their study in an urban area. However, the contrast in exclusive breastfeeding rates in the study in Anambra and this study could be attributed to the proximity and utilisation of infant welfare clinics at Nnamdi Azikiwe University Teaching Hospital substations in the communities by the mothers.

Nigeria's exclusive breastfeeding rate continues to be among the lowest in Africa, and has not improved in the last five years (NPC and ICF Macro, 2014). In comparison with Ghana, Nigeria's closet Anglophone neighbor with contemporary colonial history, Ghana's exclusive breastfeeding rate has improved from an abysmal 2% in 1993 to 64% in 2008 (Tampah-Naah and Kumi-Kyereme 2013). In comparison with other countries with high child mortality, Nigeria is down the ranks, as China's rate is 28%, India- 46%, Pakistan-38%, Ethiopia-52% and Democratic Republic of Congo is at 37% (UNICEF, 2015). Two-third of the mothers in this study agreed that exclusive breastfeeding was beneficial to the health of their children. However, only a tenth practiced exclusive breastfeeding. Mothers reiterated the difficulties of adhering to the practice of exclusive breastfeeding in the absence of support, as the primary reason for lack of adherence to the practice.

The need to be supported and self-motivated to practice exclusive breastfeeding has been highlighted in studies by Brand *et al.*, (2011) and Hala *et al.*, (2013) wherein they observed the absence of a perceived support system, whether be it personal or professional as having a negative effect on both the initiation and duration of breastfeeding by mothers. Furthermore, documented experiences of mothers from other countries; Otoo *et al.*, (2009) in Ghana, Arts *et al.*, (2011) in Mozambique, and Peters *et al.*, (2005) in Germany, are consistent with the experience shared by the mothers in this study. The implication is that mothers will have to make a choice between adhering to information provided by health service providers on the benefits of exclusive breastfeeding, or let the strain of coping with the provision of household care put a stop to their practicing of exclusive breastfeeding. This could possibly explain the lack of coherence between mothers having knowledge and yet not practicing exclusive breastfeeding as observed in this study, and corroborated by Wolde *et al.*, (2014) in Ethiopia, Tuan *et al.*, (2014) in Vietnam, and Katepa-Bwalya *et al.*, (2015) in Zambia.

However, none of these studies suggested any reason for this discrepancy in action. This study associates mothers' inability to practice exclusive breastfeeding despite having knowledge, to the burden of mothers care roles in the household alongside nursing the new born child in the absence of physical and emotional support. Tohotoa *et al.*, (2009) in their study stressed that the ability of mothers to breastfeed and continue the practice of exclusive breastfeeding requires dedication, commitment, persistence and support; nevertheless these are attribute that are not innate.

Mbada *et al.*, (2013) holds the view that mothers' health belief about the benefits associated with exclusive breastfeeding could be a possible motivating reason for their exclusive breastfeeding actions. These views by Mbada and colleagues could not be substantiated in this study, as two-third of the mothers in this study mothers knew that exclusive breastfeeding was very important but just could not practice it. Invariably mothers in this study were not being led by their health beliefs but by the multiplicities of their caring roles. The multiplicities of mothers' caring roles have been shown by studies conducted in the developed world where mothers are still faced with the challenges of

breastfeeding exclusively despite their high educational level and access to strong health systems (Peters *et al.*, 2005; Örün *et al.*, 2010; Cox *et al.*, 2015)

5.1.3 Duration of breastfeeding

The mean duration of breastfeeding among mothers in this study is higher than the national average among rural women in Nigeria (NPC and ICF Macro, 2014). In this study rural women had an outlook which defines growth; as a process that should not be hastened but allowed to take its natural course. This is evident in their ‘nursing rule’ of ensuring that their children are breastfed for long durations. They described and associated cessation of breastfeeding with the child’s attainment of the walking milestone. This is a native ‘nursing rule’ which shows that traditional knowledge can be beneficial and should be studied.

There was no association found between breastfeeding duration and gender of the child in this study. This is similar to the finding by from the Nigerian demographic and health (NPC and ICF Macro, 2014). This is contrary to studies from India and North Africa by Jayachandran and Kuziemko (2011) and Chakravarty (2015) respectively which shows that boys were breastfed longer than girls. This was not the case in this study, and could possibly be explained by the equal socio-cultural value placed by the Yoruba ethnic group on both the female and male child.

5.1.4 Timely initiation of complementary feeding

Mothers’ practice of timely initiation of complementary feeding in this study is lower than the findings of Olatona *et al.*,(2014) in Lagos, Ogunlesi *et al.*;(2014) in Sagamu, but similar to the finding by Ogundele and Ogundele (2015) in Ilesa. Mothers’ early onset of complementary feeding in this study could be associated with mothers belief that breastmilk only was not sufficient in providing the nutrients necessary for the growth of the child. Two-third of the mothers fed their children with mashed family diet, which is consistent with findings from similar studies conducted in Nigeria (Ogunlesi *et al.*; 2014; Deji *et al.*, 2015). It is noteworthy that one in every thirty mothers in the study reported the use of instant noodles as complementary food. This finding is similar to the finding by Akpan *et al.* (2015) in Benin-City. Noodles are known to be lacking fiber, protein

(Lysine-an essential amino acid) and thiamine. The consumption of Instant noodles in a mix with other foods to complement its nutrient composition is advocated. However, this is not the case in rural communities where the consumption of instant noodles is not complemented with other variety of foods. Assessing the quality of common noodles sold in Nigeria markets, Onyema *et al.*, (2014) reported high amounts of heavy metals such as Cadmium, Chromium, Manganese, Nickel and Palladium which the authors linked to possible oil leaks from the production machines. Furthermore, the feeding of instant noodles violates one of the principles of Complementary feeding for breastfed children; *feed a variety of foods to ensure that nutrient needs are met.* Mothers' practice of untimely initiation of complementary feeding was found to be positively associated with prevalence of diarrhoea among the children.

5.1.5 Diarrhoea prevalence and treatment

The prevalence of diarrhoea among children at the time of assessment is higher than reported by similar studies in Nigeria (Yilgwan and Okolo 2012; NPC and ICF Macro, 2014), and Ansari *et al.*, 2012 in Nepal, and Gao *et al.*, 2012 in rural China. The higher prevalence could be attributed to the age-group of children, the study being carried out at the beginning of the raining season and mothers' early initiation of complementary feeding. One-fifth of the mothers used oral rehydration therapy as home management of diarrhoea, which is lower than findings by Adimora *et al.*, (2011) in Enugu, Agboladeet *al.*, (2015) in Ibadan and Merga and Alemayeh (2015) in Ethiopia. The difference in use of ORS in this study and these studies could be attributed to the ease in accessing of pre-packed ORS in these studies locations and higher level of education of the mothers. Enugu and Ethiopia are metropolitan cities with Pharmacy shops, and the Military Cantonment in Ibadan has a health facility to cater for the needs of the residents. This is not the case in the poor rural communities where this study took place.

Half of the mothers in this study continued breastfeeding during diarrhoea episodes in children, which is a positive infant and young child feeding practice. However, only one in forty mothers had accurate knowledge of the cause of diarrhoea in children. Mothers' associated diarrhoea in children with the child's mother being pregnant when still

breastfeeding the child, children eating vegetables and fruits, and having internal body heat. It is noteworthy, that mothers' used boiled Guava leaves as treatment for diarrhoea in children. Although the efficacies of Guava leaves in the treatment of Diarrhoea have been highlighted in literature by *Caceres et al.*, (1990) and Kumar (2012), this method of treatment of diarrhoea has not been approved by the World Health Organisation.

5.1.6 Vaccination coverage by child's age

Four-fifth of the mothers were aware of the need for child immunisation, and a tenth were able to mention two vaccine preventable diseases in children. This result is lower than that obtained by *Ekure et al.*, (2012) in Ile-Ife, where four-fifth of the respondents had a correct knowledge of the purpose of immunisation. This difference in knowledge could be explained by the fact that the study was done in a community hosting a federal university and teaching hospital wherein the respondents have frequent contact with health personnel, and the possibility that they had a higher educational level.

In this study, mothers assumed that immunisation was a cure for all diseases. This notion of mothers is similar to the finding by *Oluwadare* (2009) in Ekiti. This implies mothers had a misconception about the nature of diseases covered by routine immunisation. If mothers believe that immunisation cures all diseases and subsequently their children still falls ill, mothers could conclude that immunisation is a complete waste of time and false. This might be why some mothers have lost faith in immunisation.

Two-third of the children had complete vaccination by age at the time of assessment. More children in the MSSG had complete vaccination by age than in the EG and CG. This could be associated with the fact that the MSSG communities are earmarked under Mid-Wives Service Scheme, and so have readily access to vaccines supplies. Overall, more children defaulted in the measles vaccination across the three study groups. This is consistent with similar studies by *Obiajunwa and Olaogun* (2013) in Oshogbo and Ifewara in Osun state, and *Cockcroft et al.*, (2014) in rural communities at Bauchi and Cross River States. This study identifies two reasons that could possibly explain the poor uptake of the measles vaccination. First, the time lag between the receipt of the last immunisation and

due time for measles is 6 months. This could result in mothers being unable to remember to take their children for immunisation, and so mothers require reminders to take their children for measles immunisation. Secondly, health workers in an effort to maximize the available vaccine prefer vaccinating groups of children at each point in time than vaccinating a single child. Health workers state that once the measles vial is opened it cannot be re-used, hence they prefer a group of children requiring measles vaccination visiting the clinic. This action by the service providers is in tandem with the Open Vial policy which states that- open vials of measles, yellow fever, BCG, and freeze dried Hib vaccine cannot be used after an initial immunisation session. They must be discarded within six hours of reconstruction or at the end of the session, whichever comes first.

5.1.7 Mothers level of education and practice of CSIs

Mothers' level of education had a significant relationship with mothers' CSIs knowledge and practice scores in this study. This finding is consistent with Ajao *et al.*,(2010) in Ile-Ife, Adnan and Muniandy (2012) in Malaysia and Gyampoh *et al.*,(2014) in Ghana. The attainment of secondary school level of education in this study was the most significant level of education required by mothers to have good knowledge and practice scores of CSIs. This is corroborated by Ogunlesi (2010) in Sagamu wherein he observed that at least a secondary education positively influenced timely initiation of breastfeeding, exclusive breastfeeding and avoidance of pre-lacteal feeding.

Makoka (2013) in an analysis of the impact of maternal education on child nutrition showed that the threshold level of maternal education above which it significantly improves child stunting and underweight is 9 years of schooling in Malawi and 11 years of schooling in Tanzania and Zimbabwe. In contrast, Burchi (2010), Bisiriyu and Ojewumi (2014), suggested that higher maternal education does not necessarily translate into practice of child survival interventions, but may prompt mothers health seeking behaviour. Thus, it is not the formal education that makes the practice of CSIs efficient but the self-awareness that comes with being educated which spurs mothers to know, how, where and when to seek help in times of crisis.

The policy implication is thus, if maternal education is to play a significant role in reducing child malnutrition, women need to be educated beyond the primary school level, and in addition nutritional education programs offered to women, particularly those with low levels of education, to help them attain better nutritional outcomes for their children. A window of opportunity is the government approved Family Life HIV/AIDS Education (FLHE) programme integrated into the curriculum of secondary schools in Nigeria. FLHE provides an avenue for basic nutrition education to be mainstreamed into high school education. In addition, it is necessary to reiterate the influence and support that service providers can provide to mothers as they act as front liners in the process of child delivery, and provision of training to Traditional Birth Attendant (TBAs) and all other village child delivery groups who offer community health services within the communities.

5.2. Fathers' involvement in mothers' use of child survival interventions

5.2.1 Fathers Demographic Characteristics

There was no significant difference in the demographic characteristics of fathers in this study. The major child support provided by fathers to their spouses (*mothers*) was financial support.

5.2.2 Fathers' involvement in immunisation, exclusive breastfeeding and contraceptive use

This study teased out the comparative contribution that fathers make in child health, but also using mothers as 'mirrors' in validating fathers self-rating of their involvement. This method of self-rating has been used in similar studies by Schluter *et al.*, (2007) and Gao *et al.*, (2011). Exclusive breastfeeding, immunisation and contraceptive use were selected based on low uptake of these interventions by mothers in Nigeria.

5.2.2.1 Fathers involvement in immunisation

In this study, no significant relationship was observed between fathers' educational level and child's immunisation status. This finding corroborates the finding by Brugha *et al.*, (1996) in Ghana, where the authors assessing the role of fathers in child's immunisation uptake in Ghana stated that having an educated father alone was not enough to ensure a child's uptake of immunisation, but that fathers' *active* participation in decision making to

immunise the child was necessary for the child to receive immunisation. The finding from this study and that from Brugha *et al* are contrary to finding by Subhani *et al.*,(2015) in Bangladesh.This dissimilarity could be attributed to the fact that Bangladesh socio-cultural perspective is different from that in West Africa, and the country receives huge support in foreign development assistance in critical sectors of the country.

In general fathers showed a positive attitude towards immunisation. However, a quarter of the fathers objected the administration of injectable vaccination. Fathers were explicit about the consequences of their spouses (mothers) taking an independent decision to vaccinate the children with injectable vaccines, stating that mothers would have to bear the negative outcome alone. This is similar to the finding by Olaogun *et al.*, (2005) in Osun, which showed that though mothers were the likely care givers, fathers had the final decision making and financial roles in households.This creates a sense of fear in mothers, which could prevent them from vaccinating their children. This is consistentwith findings by Abdulraheem *et al.*, (2011) in Awe, Kwara state where parents objected, disagreed or had concerns about immunisation in rural communities, and state level findings by NPC and ICF Macro (2014) which indicates the fear of the side effects of immunisation as the main reason given by mothers for refusing immunisation of their children in Oyo State. It is noteworthy that fathers saw their spouses (mothers) as having the task to take the child for immunisation, and ascribed the provision of information on immunisation to mothers as their role in the immunisation process.

5.2.2.2 Fathers involvement in exclusive breastfeeding

Two-third of fathers in this study had negative attitude towards exclusive breastfeeding, and none of the fathers in this study have ever discussed the practice of exclusive breastfeeding with their wives. This is an indication of poor spousal communication and lack of paternal access to information in regard to issues relating to the child health and development. This has been confirmed in a similar study by Brown and Davies (2014). Secondly the lack of fathers' knowledge of exclusive breastfeeding is indicative of the waning of the concept of exclusive breastfeeding in rural areas in Nigeria, in comparison to the early 1990's when exclusive breastfeeding was disseminated through the baby

friendly hospital initiative. This fact was acknowledged by UNICEF in Nigeria during the marking of two decades of the weekly celebration of breastfeeding in 2012. UNICEF decried the reduced rate of exclusive breastfeeding in Nigeria, linking this low rate to reduced baby friendly hospital initiative programming, inadequate training, poor enforcement of the code for marketing breast-milk substitute and little or no compliance with the 10 steps in accredited maternities

The notion that exclusive breastfeeding is an alien concept imported from West was emphasised by fathers in this study. This alludes to the fact, that rural fathers' perception and attitude towards exclusive breastfeeding is judged from the perspective of educational qualification, social status, and geographical location. The decision not to support wives to breastfeed exclusively is thus hinged on the notion...*If urban dwellers that are more educated than we are, do not practice exclusive breastfeeding...Why should we?*

5.2.2.3 Fathers involvement in contraceptive use

Contraceptive use was never discussed between fathers and their spouses (mothers) in this study. This is similar to the findings by Ijadunola *et al.*, (2010) in Ile-Ife, and Etukudo (2015) in Jesse Kingdom. Spousal communication of contraceptive use has been linked to approval of its use among couples. Two-third of fathers were not in support of their spouses using contraception, for the following reasons: desire to have more children, to avoid promiscuity, desire to have a male child, fear of side effects, and fear of HIV. These reasons are similar to that obtained in related studies by Okwor and Olaseha (2009) in Ibadan, Matlala and Mpolokeng (2010) in rural South Africa, and Kabagenyi *et al.*, (2014) in rural Uganda. One in seven fathers claimed to have used a form of contraception. All fathers who have ever used any form of contraceptive used the male condom, which is consistent with findings by Lawoyin *et al.*, (2002) among rural men in South West Nigeria, and Char *et al.*, (2011) in India. The choice of male condom could be attributed to the massive awareness created by HIV programming, wherein the condom is used as dual protection from pregnancies and sexually transmitted infections. Fathers' ability to decide the choice of method of contraceptive to be used is an expression of gender stereotyping in sexuality and reproduction, and has been confirmed by Link (2011) in rural Nepal. The

use of contraceptives is not listed as a proven child survival intervention by the Lancet series on Child Survival of 2003. Nevertheless, studies show the potential contribution of contraceptives use in reducing under-five mortality, by reducing the frequency of birth, spacing births and helping to determine when to have a child (Chola *et al.*, 2015a; Brown *et al.*, 2015)

5.2.3 Mothers rating of spouses support on immunisation, exclusive breastfeeding and contraceptive use

5.2.3.1 Mothers rating on immunisation

Mothers' rating of spouses (fathers) was in agreement with self-rating of the fathers. Mothers rated four-fifth of fathers as being supportive of immunisation, while one-fifth were not in support. This is in sync with fathers rating of their support towards immunisation. Mothers quoted a Yoruba proverb to paint fathers disagreement with the administration of injectable vaccines, and I quote... '*Obe ti bale ile kii je iyale ile kii se e*' meaning literally a wife does not cook a soup which she knows her husband detests and does not eat. This is similar to the finding by Babirye *et al.*, (2011) in Uganda, where mothers were out-rightly refused by spouses to immunise their children. This is in tandem with the statement made by fathers that their wives would bear the negative consequences of immunizing their children with injectable vaccines.

5.2.3.2 Mothers rating on exclusive breastfeeding

Three in seven fathers were rated by mothers as supportive of the practice of exclusive breastfeeding, and seven in ten were not supportive of the practice. This finding is similar to that by Chimuka *et al.*, (2015) in Lusaka, where mothers cited their husbands as having influences over their exclusive breastfeeding practice. Mothers in this study stated the following reasons for father's being un-supportive; fathers desire for early introduction of complementary feeding, fathers lack of information of the benefits to exclusive breastfeeding to the child, fathers believe that breastmilk is not sufficient, and the understanding that water is also food. This finding is contrary to the finding by Karande and Perkar (2012) in India, wherein the authors concluded that only maternal attitudes

played an influential role in achieving exclusive breastfeeding, and not the attitude of the fathers.

5.2.3.3 Mothers rating on contraceptive use

Mothers rated one fifth of fathers as supportive of contraceptive use, while four-fifth were not in support. Mothers stated the following reasons for fathers' being un-supportive; (i) failure rate of modern contraceptives, (ii) desire for more children, (iii) myth/conceptions about contraceptives, (iv) disagreement between couples to use or not to use contraceptives, (v) lack of information on contraceptives, and (vi) beliefs that it will make their wives promiscuous.

The results from this study show that fathers' are critical decision makers influencing mother's use of child survival interventions. In addition, it shows the complexities associated with the practice of child survival interventions within the household and community to an extent. In conclusion, it can be implied that mothers' practice of exclusive breastfeeding, immunisation and contraceptive use is influenced by their spouses' attitude, perception and support. There is need to integrate fathers in child health promotion efforts, to ensure that child health and nutrition concerns are not limited to mothers only, but are also the concern of entire households and communities (Kuyper and Dewey, 2012). The continuous focus on mothers alone continues to widen the gender gap, and make mothers' role that of only caregivers, thus strengthening existing gender stereotypes. The request by mothers for fathers to be supportive of the use of child survival interventions is clear from this study. In 2015, Lagos state became the first state in Nigeria to institutionalize a paid paternity leave of 10 working days and 6 months maternity leave for staff of the Lagos government civil service. There is need for the private sectors to emulate this act as one of the ways of providing support to women, especially among primigravida who will require more support to breastfeed efficiently.

5.3 Effects of peer education on mothers' use of child survival intervention

5.3.1 Effect of peer education on mothers CSIs practice scores at post intervention

This Quasi-experimental study using peer educators increased mothers' uptake of CSIs and showed a positive effect on the duration of exclusive breastfeeding, diarrhoea

episodes and treatment, and immunisation in children. Duncanson *et al.*, (2014) stated the plausibility of using mothers as peer educators in increasing the use of child survival interventions; wherein mothers confirmed their willingness to be peer educators to fellow mothers as a feasible method of disseminating information related to child nutrition and feeding. This study confirms Duncanson and colleagues proposition.

In this study, mothers practice scores in the peer education communities was higher than that of the MSSG and CG at post intervention. This seeming increase in mothers practice score in the EG can be associated with support provided to mothers by the peer educators. This is consistent with findings by Sule *et al.* (2009) in South west region in Nigeria, Najimi *et al.* (2013) at Isfahan City in Iran, Yin *et al.*, (2009) in rural China. Some educational intervention studies similar to this study have used health professionals; nurses, Community Health Extension Workers, nutritionists amongst other health professionals in providing the intervention (Walder *et al.*, 2011). This study is unique in the use of mothers as peer educators in promoting learning, information and education, and social support in resource constricted communities.

The mother peer educators in this study shared knowledge and skills using the concept of social networking as the basis for building influence and bringing changes to mothers, and this formed the basis for using mothers rather than health workers as peer educators in this study. Linkages to the health centers were facilitated by peer educators through encouraging mothers to seek health care services for their sick children. Mothers were able to also share their learnings and experience of using CSIs through monthly meeting held by the peer educators in the EG.

5.3.2 Effect of peer education on mothers practice of exclusive breastfeeding

In the first month of the intervention a third of the children in the EG were breastfed exclusively, half of infants in MSSG and a fourth of infants in the CG. At 6 months, the proportion of infants being breastfed exclusively were three in ten in the EG, one in three in the MSSG and no child was being breastfed exclusively in the CG. This finding in the MSSG and CG are lower than that reported by Akodu *et al.*, (2014) in Lagos. This

difference could be attributed to the socio-cultural differences of the respondents; the mothers in the study by Akodu and colleagues study were more educated, earned higher incomes, and attended a private health facility in a metropolitan city. It is noteworthy that mothers in the EG had higher exclusive breastfeeding rate than that observed by Akodu and colleagues. This can be attributed to the presence of the mother peer educator who provided support to mothers to breastfeed exclusively.

This approach of using selected and trained members of the community or health staff in increasing mothers exclusive breastfeeding rates have been used in other studies in both developed and developing countries(Morrow *et al.*,1999; Bhandari *et al.*, 2003; Aidam *et al.*, 2005; Kronborg *et al.*, 2007). In rural Malawi, Lewycka *et al.*, (2013) showed improved exclusive breastfeeding rates among breastfeeding mothers through the use of women groups in providing information and support for exclusive breastfeeding. Similarly, in a study in Uganda (Chola *et al.*,2015b) recorded a doubling of exclusive breastfeeding among mothers through the use of Peer counselling.

In Nigeria, the use of peer support has been extensive in HIV programming, but otherwise in Child survival. However, Qureshi *et al.*, (2011) carried out a study using community volunteers in improving mothers' knowledge of exclusive breastfeeding and infant feeding practices in Sokoto state, North West of Nigeria. The authors reported a significant increase in the number of mothers willing to practice exclusive breastfeeding at post intervention, as compared to baseline. The results from their study are inconclusive as the use of trained community volunteers in obtaining information on mothers' willingness to practice exclusive breastfeeding could have affected mothers' responses. In addition, the study did not measure the actual number of mothers' breastfeeding exclusively but mothers who were willing to breastfed exclusively. This was not the case in this study, as both the willingness and demonstrated ability of mothers to breastfeed exclusive were measured.

5.3.3 Effect of peer education on diarrhoea treatment offered by mothers

The 14-day diarrhoea prevalence was lower in the EG than in the MSSG and CG. The reduction in the episodes of diarrhoea in EG could be associated with mothers' understanding of the etiology of diarrhoea and also carrying out the right caring practice to prevent diarrhoea infection in their children. The proportion of mothers utilising ORT as a home management method was higher in the EG than in the MSSG and CG. This result is similar to finding by Ie Roux *et al.*, (2014) in South Africa, wherein the authors observed a reduction in diarrhoea in the intervention group supported by peer educators. There are no known studies in Nigeria, which have examined the effect of peer education on diarrhoea management by mothers.

5.3.4 Effect of peer education on immunisation uptake

Overall children in the MSSG had a higher number of completion of vaccination by age. The immunisation status of the children in the EG improved significantly at the 12th month, compared to the first month. This finding is similar to that obtained by Banwat *et al.*, (2014) in Chanso and Zarazong communities in Plateau state. In this study, the use of Peer education may have improved health and even nutrition in ways that were not directly measured. For instance, mothers became more aware of the importance of seeking health care service, understanding the roles of health workers and of completing immunisation schedules for their children, and thus collectively placed a demand on the health service staff to provide immunisation for their children. This finding has been corroborated by Johri *et al.*, (2015) in a systematic review on approaches to increasing childhood vaccination in low-middle income countries, wherein they showed that education or knowledge translation interventions were the most effective interventions at increasing immunisation uptake. Immunisation continues to provide itself as the least used but the most important window of opportunity for increasing mothers' use of child survival interventions either through the health facility or through using community based approaches.

5.4 Evaluate the use of child survival interventions on the nutritional outcomes of children 0-36 months

5.4.1 Mean weight, length/height

In the first month, significant difference was observed in the mean weight and length/height of children. At six months there were no significant differences in mean weight and heights of children across the three study groups.

At the 9th month, children in the EG whose mothers were exposed to peer education had an increase in height of 0.7cm/month, when compared with Children in the CG and MSSG who increased in height by 0.4cm/month and 0.5cm/month respectively from the reference height at six months. In the 12th month, children in the EG had an increase in height of 1.7cm/month, compared to Children in the CG and MSSG who increase in height by 0.6cm/month and 1.1cm/month respectively. Although no significant difference was observed in the 12th month across the three study groups in children's length/height, children in the EG length/height were highest. The possible inference that can be deduced is that it takes 9 months for a significant difference to be observed in children's length/height in an intervention study in which there is no feeding supplementation.

Although no significant difference was observed in weight gain across the study groups at the 6th month, children in the three groups had a mean increase in weight of 0.54kg/month in the EG, 0.43kg/month in MSSG and 0.37kg/month in the CG. At the 9th and 12th months a difference in weight was observed across the three study groups. This result is contrary to results obtained in studies by Morrow *et al.*, (1993) in Latin America, Bhandari *et al.*, (2003) in India, and Sule *et al.*, (2009) in Nigeria, in which no significant changes in the mean weight of the children in the experimental and control groups were observed. The possible explanation to the difference could be in the age-group of children targeted and the duration of the study. These studies were conducted for six months with children in the age-group of less than 18months. This was not the case in this study.

This study result is similar to the finding by le Roux *et al.*, (2011) in South Africa. le Roux *et al.* conducted a randomised control trial in South Africa in which mothers were selected and trained as 'mentor mothers' to provide home visit and support mothers with

nutrition-related problem facing their children under six years old for 12 months. The study showed children in the intervention group gaining significant weight compared to those in the control group.

5.4.2 Wasting (WHZ) among children across four time points

In the first month there was no significant difference recorded between the groups mean weight-for-height WHZ-scores. The children in the EG had higher mean z-scores for weight-for-height (WHZ) than children in MSSG and CG at 6th month, at the 9th month and at the 12th month. This is similar to the finding by Zhang *et al.*, (2013) in rural China.

Children in the MSSG and CG had higher episodes of diarrhoea than children in the EG. These higher incidences of diarrhoea were expected to translate to growth faltering in the children which was not annotated in this study. A plausible explanation could be associated with mothers' practice of continued breastfeeding during diarrhoea and longer duration of breastfeeding in the study groups, which could have made up for any growth faltering caused by diarrhoea. Previous studies have reported the effects of breastfeeding in reducing growth faltering in children with bouts of diarrhoea (Bhandari *et al.*, 2003; Lamberti *et al.*, 2011; Horta and Victora 2013). This study supports their findings.

Children in MSSG and CG eventually transitioned into Z-scores category of $\geq -1SD$ for weight-for-height/length (WH/L) at the 12th month. However, the rate of transition was faster in the EG, and the children in the EG had higher WH/L-Z-scores.

5.4.3 Stunting (HAZ) among children across four time points

No significant difference was observed in height-for age (HAZ) z-scores of the children in the groups in the 1st and 6th month. HAZ was significantly different in month 9 and 12, with children in the CG having lesser HAZ z-scores than children in the EG and MSSG. This result is similar to findings by Reul *et al.* (1999) in Ghana and Amugsi *et al.* (2014) in Ghana.

5.4.4 Underweight (WAZ) among children across four time points

Significant difference was observed in weight-for-age (WAZ) z-scores between EG and CG, and between EG and MSSG in the 6th, 9th and 12th months of the study. Findings were similar to that observed for mean weights.

5.5 Limitations of the study

The findings from this study need to be interpreted within the context of some study limitations. First, the inability to randomly assign individuals into groups was not practicable in this study due to ethical concerns. Second, the study was conducted in small scale due to constrain of time and resources. Although, total population of children between 0-36 months were used in each community, the sample sizes were not large. Third, the practice of exclusive breastfeeding by mothers were reported and not based on observations, hence they were subjective.

Recall bias on the part of mothers was a possibility in the study. This is because some variables were based on reports from mothers and not observations. For instance the number of contact made with mothers' breastfeeding exclusively was low in the control groups. There was the need to reduce frequent contact with the control groups to avoid the Hawthorne effect. Fourth, the WHO Antho 2006 software only measures weight-for-length/height standard ranges of 45 to 110 cm/ 65 to 120 cm. Hence children with either shorter or longer lengths/heights than standard ranges were not included in the data analysis. Finally, the study witnessed some level of attrition of mother-child pair across the study groups. The attritions were either from dropping out of participants from the group during the intervention phase or a failure to collect data from a study unit in subsequent rounds of home visits.

5.6 Conclusion

This study evaluated the effects of peer education on mothers' practice of child survival interventions in rural households in Ibadan, Nigeria. The study provided the opportunity to test a package of child survival interventions in a real world setting using mother peer educators in the context of rural households in Ibadan. The study showed that peer

education is a cost effective and acceptable intervention that can be translated to other communities to reduce under-five child morbidity and mortality.

The findings from the study showed increase in practice of CSIs in the intervention group; increased practice of exclusive breastfeeding, decreased episodes of diarrhoea, increased fluid intake by children during episodes of diarrhoea, increased child immunisation uptake and reduced nutritional wasting among children less than three years old in the households. The Focus Group Discussions (FGDs) with fathers showed fathers' interest and demand for inclusion in the design of child nutrition and health programmes.

Mothers not targeted by the study benefitted from participatory learning and shared information on CSIs, through non-formal and formal communal structures such as the age grade groups meetings, religious meetings, and Parents Teachers Association (PTA). The Mid-wives Service Scheme (MSS) is a commendable initiative by the government, and should be continued in the LGAs. However, there is still need for investment in health systems required to deliver vaccines to rural and hard to reach areas.

The sharp fall in oil prices globally has significantly affected government's revenues. The Nigerian government will need to make significant public expenditure adjustments, without compromising their allocations to social sector programmes. Furthermore, the sheer size of Nigeria and poor road network takes some time for interventions to have full coverage. The use of peer education approach will help policy makers address challenges arising from cuts in fiscal spending and the transaction time required for intervention to reach rural communities. The peer education approach will complement the MSS programme of the government; provide human resources required to deliver health information and services to mothers and their children in rural and hard to reach areas; it will augment the shortages of staff in the health care centres in rural areas; and help roll out and implement the governments' new social protection policy in rural areas.

5.7 Contribution to knowledge

The study made contribution to knowledge in the field of child survival in a number of ways. First, this study has shown the feasibility of increasing mothers' use of child survival interventions in rural communities by using peer education. This confirms the validity of similar works that have been carried out in other parts of the world. The study provides fresh empirical affirmation to the effectiveness of child survival interventions not only in reducing under-five child morbidity but in improving nutritional status of children 0-36 months in rural households. Second, the study contributes to the limited body of literature in Nigeria assaying fathers' contribution to mothers' practice of child survival interventions in rural communities. The study confirms fathers' health preferences and motivation does not only influence that of their wives but that of their children.

Third, the review of literature shows a lack of clarity and consensus among researchers on the possible reasons for mothers' adequate knowledge of exclusive breastfeeding; but poor practice. According to the knowledge of the researcher this is the first time the logic is being explained in a study. Fourth, a positive improvement in stunting was observed only in the children in the intervention group after a nine month timeline. The package of interventions provided in this study did not include the provision of food supplementation, or food aid. Does this mean that in the absence of a feeding intervention, but increased practice of the selected package of interventions in this study, stunting will start to decrease from the ninth month? This study suggests that this direction of change in stunting is meaningful and should be verified by further research in a similar context.

Finally, the use of a community based growth monitoring approach provided window of opportunities to meet with mothers and their children in their household setting, interact with other household members, especially fathers, grandmothers and provide nutrition education to everyone within the household.

5.8 Recommendation

This study considered the effect of peer education on mothers' use of child survival interventions in rural households in Ibadan, Nigeria. The results from the study provide

insights and directions for future research. Hence some recommendations are provided for future research.

First, this study only explored the use of mothers as peer educators in improving uptake of CSIs, though not completely new in child survival literature in Nigeria. It is imperative that fathers are actively engaged in child nutrition and health programmes since the decision making lies with them, and even used as peer educators in reaching other fathers. Second, this study was conducted in communities within the same geopolitical zone in Nigeria; among communities with cultural similarities. It will be commendable if a similar study is carried out using dissimilar cultural communities to compare results, cross learning and possibly a generalisation of the findings.

Third, the perception, attitude and reflections of health service providers were not considered in this study. Health service providers also make critical contribution to health quality and equity, integrating them into a similar study should be considered. Fourth, the need to create communal social platform through which mothers can be reminded to take their children for immunisation will be an interesting area for future study. In the urban areas, it will be worthwhile to investigate how social platforms like Facebook, twitter, and mobile phones can be used to bridge the gap between mothers recall failure of their children's immunisation appointment and vaccination completion?

Finally, is the need for research on the possibility of having a single dose of vaccine that covers the basic immunisation required by children under-five years. Is it possible for a multi-vaccine to be developed with Measles inclusive, to reduce the time lag between the last vaccine and the appointed time for receipt of measles?

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Appendix I-First year letter of Institutional ethical approval from UCH/UI



INSTITUTE FOR ADVANCED MEDICAL RESEARCH AND TRAINING (IMRAT)
COLLEGE OF MEDICINE, UNIVERSITY OF IBADAN, IBADAN, NIGERIA.
E-Mail - imratcomui@yahoo.com



UI/UCH EC Registration Number: NIIREC/05/01/2008a

NOTICE OF FULL APPROVAL AFTER FULL COMMITTEE REVIEW

Re: Integrating Facilitative Education into Child Survival Interventions in Selected Rural Households in Oyo State, Southwest Nigeria.

UI/UCH Ethics Committee assigned number: UI/EC/10/0126

Name of Principal Investigator: Gloria T. Momoh


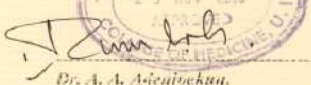
Address of Principal Investigator: Department of Human Nutrition,
College of Medicine,
University of Ibadan, Ibadan

Date of receipt of valid application: 23/07/2010
Date of meeting when final determination on ethical approval was made: 25/11/2010

This is to inform you that the research described in the submitted protocol, the consent form, and other participant information materials have been reviewed and given full approval by the UI/UCH Ethics Committee.

This approval dates from 25/11/2010 to 24/11/2011. If there is delay in starting the research, please inform the UI/UCH ethics Committee so that the dates of approval can be adjusted accordingly. Note that no participant recruitment or activity related to this research may be conducted outside of these dates. All informed consent forms used in this study must carry the UI/UCH EC assigned number and duration of UI/UCH EC approval of the study. It is expected that you submit your annual reports as well as an annual request for the proposed renewal to the UI/UCH EC early in order to obtain renewal of your approval to avoid disruption of your research.


The National Code for Health Research Ethics requires you to comply with all institutional guidelines, rules and regulations and with the tenets of the Code including ensuring that all adverse events are reported promptly to the UI/UCH EC. No changes are permitted to the research without prior approval by the UI/UCH EC except in circumstances outlined in the Code. The UI/UCH EC reserves the right to conduct compliance visit to your research site without previous notification.




Dr. A. A. Adegunleke,
Chairman, Medical Advisory Committee,
University College Hospital, Ibadan, Nigeria
Vice-Chairman, UI/UCH Ethics Committee
E-mail: uiuchec@yahoo.com

Research Units: ■Genetics & Bioethics ■Malaria ■Environmental Sciences ■Epidemiology Research & Service
■Behavioural & Social Sciences ■Pharmaceutical Sciences ■Cancer Research & Services ■HIV/AIDS

Appendix II-Second year letter of Institutional ethical approval from UCH/UI



INSTITUTE FOR ADVANCED MEDICAL RESEARCH AND TRAINING (IAMRAT)
COLLEGE OF MEDICINE, UNIVERSITY OF IBADAN, IBADAN, NIGERIA.
E-mail: imratcomui@yahoo.com



UI/UCH EC Registration Number: NHREC/05/01/2008a

Notice of Renewal of Approval

Re: Integrating Facilitative Education into Child Survival Interventions in Selected Rural Households in Oyo State, Southwest Nigeria

UI/UCH Ethics Committee assigned number: UI/EC/10/0126

Name of Principal Investigator: **Gloria T. Momoh**

Address of Principal Investigator: Department of Human Nutrition,
College of Medicine, University of Ibadan, Ibadan

Date of receipt of valid application: 31/10/2011


Status: **2nd Year Approval**

This is to inform you that we have received your 1st Annual Report for the above named research. The report indicates brief information on the work done so far which include administration of questionnaire and focus group discussion. It also shows that the study is ongoing.

The Committee notes the contents of the report and having found it satisfactory, hereby approves your request for **One Year Only**.

This approval dates from 25/11/2011 to 24/11/2012. Note that no participant accrual or activity related to this research may be conducted outside of these dates. *All informed consent forms used in this study must carry the UI/UCH EC assigned number and duration of UI/UCH EC approval of the study.* It is expected that you submit your annual report as well as an annual request for the project renewal to the UI/UCH EC early in order to obtain renewal of your approval to avoid disruption of your research.

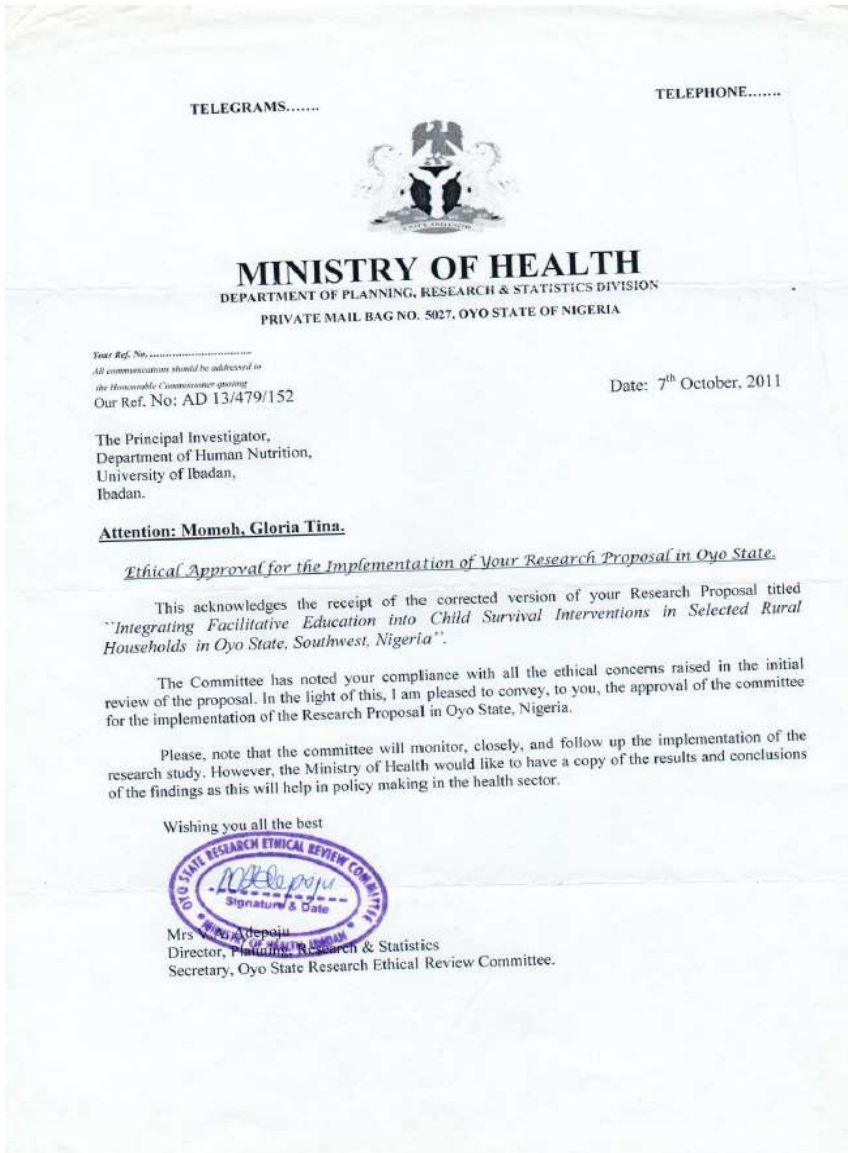
The National Code for Health Research Ethics requires you to comply with all institutional guidelines, rules and regulations and with the tenets of the Code including ensuring that all adverse events are reported promptly to the UI/UCH EC. No changes are permitted in the research without prior approval by the UI/UCH EC except in circumstances outlined in the Code. The UI/UCH EC reserves the right to conduct compliance visit to your research site without previous notification.



Prof. A. Ogunniyi
Director, IAMRAT
Chairman, UI/UCH Ethics Committee
E-mail: uiuchirc@yahoo.com

Research Units • Genetics & Bioethics • Malaria • Environmental Sciences • Epidemiology Research & Service
• Behavioural & Social Sciences • Pharmaceutical Sciences • Cancer Research & Services • HIV/AIDS

Appendix III- State Ministry of Health ethical approval from Oyo State



Appendix IV- Semi-structured Questionnaire

ASSESSMENT OF THE KNOWLEDGE AND PRACTICE OF MOTHERS ON USE OF HOUSEHOLD CHILD SURVIVAL INTERVENTIONS

Introduction

Good day, my name is-----, I am from the Department of Human Nutrition, University of Ibadan. We are carrying out a study that primarily looks at**ASSESSING OF THE KNOWLEDGE AND PRACTICE OF MOTHERS ON USE OF HOUSEHOLD CHILD SURVIVAL INTERVENTIONS** in Oyo state.

Consent: Now that the study has been well explained to me and I fully understand the content of the study process. I will be willing to take part in the programme.

.....
Signature/Thumbprint of Participant/Date Signature of Interviewer/ Date

Name of Community:

Child's Code:

Child Mother's name (optional):

Child Mother's Mobile Phone No/or of any other household member
.....

Child's name (optional):

Child's age (in months):

Child's sex: 1 Female () 2 Male ()

Address (Please describe, identify with land marks, key signs, number, street, neighborhood, section)

.....
.....
.....

Section A: Demographic Details

(1) Mother's Age.....

(2) Religion:

(3) Marital Status: 1 Single () 2Married () 3 Divorced () 4Widowed () 5
Cohabiting ()

- (4) If married, do you live with your husband or partner? 1 Yes() 2 No() 3 No, because he works in a different town
- (5) What is your Highest Educational Qualification? 1. No formal Education () 2. Primary School () 3. Secondary School () 4. Tertiary Education ()
- (6) At what age did you get married?
- (7) Where did you deliver your last baby? 1. At home () 2. Health Facility () 3. Traditional Birth Attendant () 4. Church () 5. Others.....
- (8) At the time of birth of the child what was the child's birth weight?
- (9) Number of Children given birth to
- (10) Please can I know the number of children alive dead
- (11) How many of you eat together?
- (12) Do you live in an extended family household? 1 Yes() 2 No()
- (13) Are you using any form of Family Planning at the moment? 1 Yes() 2 No()
- (14) If Yes to Quest 13, what type of Family Planning Method?
- (15) If No why?
- (16) What do you do to earn a living?
- (17) What is your income in a month? 1 Less than N5000 () 2.> 5000- 7000 () 3. > 7000-9000 () 4. > 9000- 10,000 () 5. > 10,000 ()
- (18) Do you have total control over the income you earn in a month? 1 Yes() 2 No()
- (19) If No, why?
- (20) Which of the following household assets do you own in your household? 1. Television () 2. Radio () 3. Mobile phone () 4. Car () 5. Motorbike () 6. Bicycle ()
- (21) Do you or any of your household member work their own or family farm land? 1. Yes () 2. No()
- (22) If yes, what are the farm foods grown?

Section B: Mother's Knowledge and Practice of Child Survival Issues

- (23) What was the first liquid the child consumed after birth?
- (24) Did you breastfeed your youngest child? 1.Yes () 2.No ()

- (25) If yes Why? -----

- (26) If No Why?
.....
.....
- (27) When did you start breastfeeding the child after birth? 1. Within 1 hour after birth () 2. More than 1 hour after () 3. A day after birth () 4. 2 days after ()
5. A week after () 6. Months later ()
- (28) How often do you breastfeed the Child throughout the day? 1 Thrice daily ()
2. Upon crying () 3. Upon feeling the stomach () 4. At several intermittent Intervals ()
- (29) Apart from breast milk did you give any food or liquid to the child? 1. Yes () 2. No()
- (30) If yes/no why?
.....
- (31) Are you currently breastfeeding the Child? 1. Yes () 2. No()
- (32) If yes/no, Why?
.....
.....
- (33) How old was the Child, when you stopped Breastfeeding?
.....
- (34) If the mother is till breastfeeding, at what age would you want to stop the breastfeeding your Child and why?
.....
.....
- (35) Why is Exclusive breastfeeding Important?
.....
.....
- (36) How old was the child when you introduce the child to family food?
.....
- (37) If the child is above 6 months, what was the main meal the child ate yesterday?
.....
.....
.....
- (38) Is there any special weaning food fed to children when they are weaned? 1. Yes ()
2.No()
- (39) If yes, please state the foods

.....
.....

(40) How many times do you feed the Child in a day?

.....
.....

(41) In the last 2 weeks has your child suffered from diarrhoea? 1. Yes () 2.No ()

(42) When your Child has diarrhoea how do you treat the diarrhoea?

.....

.....
.....

(43) Do you still breastfeed the child when the child has diarrhea? 1 Yes() 2No()

(44) What do you know as the cause of diarrhoea in children?

.....
.....

(45) What the child has malaria, how is the child treated?

.....
.....

(46) Do you own an Insecticide Treated Net in your home? 1. Yes () 2. No ()

(47) If yes, did your child sleep under the net yesterday? 1. Yes () 2. No ()

(48) If No, to question 47, why?

.....
.....
.....

Section C: Health Services

(49)Is Immunisation important for the child's health? 1. Yes () 2. No ()

(50)If yes why is Immunisation important to a child's health?

.....
.....
.....

(51) Provide responses to the itemized immunisations in the table below, for which the child has/or not received immunisation

Type of Immunisation received	Has received	Has not received
Oral Polio		
BCG		
DPT		
Measles		
Hepatitis B		
Others		

(52) In the past three months, where have you taken the child too for health service in the community?

.....

(53) How often in a month do you use the PHC in your community? 1. Not at all () 2. Once () 3. Whenever the need arises ()

(54) State reasons for answer to Quest.53

.....

(55) What is the most frequent reason for taking your child to the health center?

.....

(56) When you visit the health facility with your child, does the service provider weigh the child? 1. Yes () 2. No ()

(57) Do you think child weighing is important? 1. Yes () 2. No ()

(58) If yes/no, State the reason

.....
.....

(59) When the Child is weighed, is the weight recorded in a card? 1. Yes () 2. No ()

(60) If yes, is the importance explained to you? 1. Yes () 2. No ()

(61)What is the most common illness why you take your sick child to the health facility?

.....
.....

Section D: Health Communication

(62) Do you remember having ever heard or read a message on television or radio, newspaper etc. about how to feed your child, including breastfeeding? 1.Yes () 2. No ()

(63) If Yes, through which of the communication channel did you hear the information?

.....
.....
.....

(64) How often do you hear this information? (Probe for per day/week/month)?

.....
.....

(65)Ask the mother if she remembers what the message said

.....
.....
.....

(66) Who has talked to you the most about your child's feeding and health care?

.....
.....

(67)What has this individual told you about your child's feeding and health care?

.....
.....
.....

Section E: Assessing Father's Involvement in Child Care and Health

(68) If your child's is ill, who makes the decision on how the child is cared for?

1. Child's Father () 2. Child's Mother () 3. Both parents () 4. Other.....

(69) Does the child's father provide money for health care when the child is sick? 1. Yes () 2.No ()

(70) Is the child's father in support of exclusive breastfeeding? 1. Yes () 2. No ()

(71) If Yes/No why?

.....
.....
.....
.....

(72) Does the child's father remind you to take the child for immunisation? 1.Yes () 2.No ()

(73)Is your husband in support of family planning? 1. Yes () 2No ()

(74)If Yes/No, why

.....
.....
.....
.....

(75) Does the child's father belong to any men's social network in the community?

1 Yes () 2 No ()

(76) If yes to the above question which men's social network?

.....

(77) What does the child's father do in assisting in feeding the baby?

.....

(78)What is the child's father Highest Educational Qualification? 1. No formal Education () 2. Primary School () 3. Secondary School () 4. Tertiary Education ()

(79) How old is the father of your child?

(80)What does the child's father do to earn a living?

.....

(81) How much does your child's father earns in a month?
.....

Section F: Household Sanitary Conditions

(82) What is your households' source of water? 1. Well Water () 2. Private Bore hole () 3. Govt. Pipe bore () 4. Rain water () 5 Stream/Rivers () 6. Others-----

(83)What is your major source of drinking water? 1. Well Water () 2. Private Bore hole () 3. Govt. Pipe bore () 4. Rain water () 5 Stream/Rivers () 6. Others-----

(84) What type of toilet facility do you use in your household? A. Water closet () B. Pit latrine C. Bush Side () E. Others -----

(85) Where is the household kitchen located? A. Inside the house () B. Outside the house () C. Shared Kitchen () D. Along the corridor () E. Other.....

Section G: Mother and Child Anthropometric Measurement

- (86) Mother's Height in cm-----
- (87) Mother's Weight in Kg.....
- (88) Child's Weight in kg
- (89) Child's Height in cm.....
- (90) What is the Child's age (in months).....
- (91) What is the mother's age.....

Name of Interviewer:

Date of Interview:

Any additional observation

.....
.....
.....
.....
.....
.....

Appendix V- Focus group discussion guide

Focus Group Discussion Guide for selected Mothers of under five in project communities

Duration: 45-60 minutes

Welcome the participants to the focus group discussion, by breaking the ice and doing a quick self-introduction. Explain that the purpose of the discussion, that it is not political, or geared towards labeling any community member as bad, but that the discussion seeks to identify better ways of improving the lives of children under-five, and their mothers. Assure mothers that it will be a fruitful and rewarding exercise. Seek their consent to be part of the discussion, document this with a consent form. Also seek their permission to use a tape recorded.

- Start with a generalized discussion on the overall feeding practices for 0-24 months in the community(Probing for any special induction ceremony for new born babies, culturally agreed feeding pattern)
- What is the mode of feeding infants in the community?(Probe for feeding method for neonate(administration of Colostrum, infants and above 12 months)
- How long is this method normally carried out?(Probe for length of exclusive breastfeeding and when family food are introduced)
- What possible challenges are mothers confronted with in carrying out exclusive breastfeeding(Probing possibly for the importance of exclusive breastfeeding both for mother and child)
- What do you consider the most challenging issues confronting mothers in this community in providing adequate nutrition to their under-five children(Probe for social support network)
- How would you rate the services being provided by the PHC in your community(Probe for service utilisation by mothers of under-five children, and why service utilisation is rated thus, probe for child weighing in the PHC)
- Apart from the PHC probe for other health providers in the community e.g.(TBA, PMVs etc)
- When a child has diarrhoea, how is it treated? (Probe for causes, continued feeding and increased fluid intake)
- What are the sources of Health Communication in the community(Probe for the possibility of using peer educators and how they will respond to this initiative)
- Discuss the role of fathers, mother-in laws in the provision of care to children under-five years(probe for particular challenges faced with other household members in terms of child feeding practices etc)
- Summarise the discussion, ask if there are other questions the mothers will like to ask from you or any clarifications desired.

- Thank mothers for attending the discussion group

Focus Group Discussion Guide for selected Fathers of under five in project communities

Duration: 45-60 minutes

Welcome the participants to the focus group discussion, by breaking the ice and doing a quick self- introduction. Explain that the purpose of the discussion, that it is not political, or geared towards labeling any community member as bad, but that the discussion seeks to identify better ways of improving the lives of children under-five, their mothers and fathers. Assure fathers that it will be a fruitful and rewarding exercise. Seek their consent to be part of the discussion, document this with a consent form. Also seek their permission to use a tape recorded.

- Start with a generalized discussion on the roles of fathers in the home(Slowly probing for them to mention caring for children)
- Thank them for mentioning children, and lay emphasis on the children by asking what they consider the greatest challenge faced by children, especially those below 2 years
- Probe for challenges that have direct relationship with nutrition, and asking why this has arisen in the community
- What do they think can be done to solve this/se challenge/s
- What potential role can fathers play in provision of care and support to their children under two years other than providing money?(Probe for involvement in immunisation, Exclusive breastfeeding and Family Planning)
- What potential limitation do fathers face in their bid to assist in child care in the households(probe for possible gender stereotype, cultural restriction etc)
- Ask fathers if there are organised social networks in the community? (probe for the names of the network, functions and relevance in the community)
- Ask to know how many of them belong to these social networks? (Note the number of the discussants belonging to the network)
- Ask the fathers what they think can be done to improve the nutritional status of children under two years in the community.(Probe for their contribution in this process)
- Summarize the discussion, ask if there are other questions the fathers will like to ask from you or any clarifications desired.
- Thank fathers for attending the discussion group

Appendix VI- Training Manual

TRAINING MANUAL

**TRAINING OF PEER EDUCATORS ON CHILD SURVIVAL
INTERVENTIONS IN RURAL HOUSEHOLDS**

OCTOBER, 2011

INTRODUCTION TO THE VOLUNTEER PEER EDUCATORS (VPEs) TRAINING

DURATION: 1 hour

Learning Objectives

Participants will be able to:

1. Complete the registration formalities
2. Get to know each other (Learner and trainer)
3. Get familiar with the training schedule and logistics
4. Carry out a pre-test
5. State the goals and objectives of the training
6. Outline the tasks of Volunteer Peer Educators(VPEs)

A. Registration

1. Welcome each participant warmly to the training site and assist in filling the bio-data form
2. Give name tag to each participant and assist, if necessary to pin it on.
3. Provide each participant with all training materials
4. Direct each participant to the training room.
5. First impressions count. Ensure that participants are warmly welcomed and treated with respect.
6. All trainers should work as a team to ensure the success of the training.

B. Opening Ceremony

1. Arrange that all participants are seated comfortably for the ceremony
2. Give all participants whether literate or non-literate, copies of the opening ceremony programme.
3. Ask invited community representatives including opinion leaders present at the opening ceremony to be seated.
4. Ask the most influential leader of representative within the community to declare the workshop/training open
5. Liaise with the contact person for the programme to plan the opening ceremony
6. Ensure that the opening ceremony is not too prolonged so that the training starts early; arrange for light refreshment to be served at the end of the opening ceremony
7. The opening ceremony will be better if it is well planned in advance.
8. Remember that community participation is key to the acceptability of the programme

C. Getting Acquainted

Ensure seating arrangement is appropriate. Short sighted trainees should be identified and seated near the board.

1. Start the session by telling participants the rules of the exercise
2. Use matching objects cut in half for the exercise
3. Provide each participant with a half cut object e.g. animals, birds, fruits
4. Ask participants to search for the person with the other half and then pair up to find out about each other using the recommended questions.
5. After 10 minutes of participants' interaction with each other as partners, invite each participant to introduce his/her partner to the larger group until everyone has been introduced.
6. Note the expectations of each participant on the flipsheet to ensure they are met.
7. When arranging seats, a U or V shape arrangement is recommended, rather than classroom-style with chairs one behind the other.
8. Remember that adults will usually sit next to somebody they already know or are attracted too. Encourage participants to make new friends.
9. Recommended questions
 - What is your name?
 - Where do you live?
 - Are you a Traditional Birth Attendant (TBA) or Volunteer Health Worker (VPE)?
 - If a VPE, how long have you been on the job?
 - What name would you like to be called during this workshop?
 - What is your favourite food?
 - Why have you decided to attend this workshop?
 - What is your expectation of the workshop?

NOTE: Feel free to use any other 'getting acquainted' exercise that you are familiar with.

D. Workshop Schedule and Administrative Arrangements

1. Explain the daily schedule to participants
2. Ask for comments and respond
3. Explain the logistics of the workshop e.g. transportation, meals reimbursement, field trip etc.
4. Encourage participants to ask questions
5. Clarify as necessary
6. Training for VPE will last for 8 days

7. Arrange to pick participants up and take them to training venue if it is not easy to reach.
8. Arrange for a group lunch and snacks to be served. This is very motivating.

E. Workshop Norms/Nomination of Group Leaders & Committee Members

1. Explain the purpose of this exercise
2. Ask participants to suggest the rules and regulations that will guide them.
3. Jot points on flipchart
4. Ask one of the participants to read out the rules
5. Ask for comments and respond as necessary
6. Stress the need to abide by the rules set.

Possible ground rules are:

- Coming to session on time
- Listening when someone is speaking
- Not shouting people down
- Not allowing visitors during training
- Showing respect for one another
- Ensuring that all mobile phones are either on silent or vibration
- Sticking to the closing time
- Introducing penalty if desired

F. Nomination of Group Leader & Committee

1. Ask participants to form a committee of four and nominate a leader
2. Ask participants to brainstorm terms of reference, Guide the exercise.
3. Jot agreed terms of reference on flipchart
4. Encourage committee to work as a team
5. A committee of four representatives from the group should be nominated. This committee will be responsible for planning, welfare, evaluation, etc. A leader should also be nominated from the group.

Terms of reference of group leader may include:

- Act as spoke-person for the participants
- Work as a team with committee members

Terms of reference for committee members:

- Assist with planning daily schedule activities
- Assist with getting hall/venue ready and with searing arrangements
- Assist with planning field trips, graduation etc.

- Assist with serving meals and cleaning
- Assist trainers with collecting and distributing materials
- Assist in identifying problems; work with trainees to solve problems.

Note: This participatory process facilitates ownership.

G. Training Methodology

1. Explain the training methodology that will be used to enhance adult learning.
2. Explain that the methods to be used are mostly participatory and include the methods listed
3. Describe each method to ensure it is understood so that participants feel at ease when methods are being used.
4. Encourage questions and provide answers.
5. End the sessions with a song.

Participatory training methods that will be used during 8days workshop include:

- Lecturette
- Brainstorming
- Discussion
- Sing song
- Story telling
- Repetition
- Role play
- Group work
- Demonstration and returned demonstration

H. Training Goal and Objectives

Training Goal

- To empower Community Volunteer Peer Educators (VPE) with knowledge and skills to improve mothers use of household child survival interventions

Training Objectives

- Increase the knowledge of VPEs on child survival interventions and possible assistance that can be provided to mothers to utilise these child survival interventions
- Strengthen skills of VPEs to motivate and counsel clients requiring household child survival interventions, family planning services and assist them to make informed choices.
- Use appropriate strategies to mobilize mothers to be actively involved in health care delivery programmes and refer mothers as when appropriate

I.VPE's Job Description

1. Ask participants to brainstorm on their expected job description
2. Note points on flipchart
3. Clarify points, make necessary amendments in line with the typed job description prepared prior the training and explain each task.
4. Encourage questions and respond.

The VPEs performs the following duties

- Conducts health education sessions for individuals, families and the community on MCH/FP and other PHC issues
- Provides care to mothers during normal pregnancy and refers to ante-natal clinic for immunisation and needs/risk assessment
- Conduct Growth Monitoring and Promotion
- Provides counseling services to clients for FP services and methods

- Acts as a liaison person between centre staff and the community
- Identifies early and refers high risk women, mothers, children and families to the clinic or health centre

- Refers danger signs in clients and refers them to the clinic or health centre

- Refers clients who require prescriptive FP methods and other assistance to the clinic or health centre
- Mobilizes community members to participate in health care programmes

- Mobilizes the community in environmental sanitation

- Promotes and advocates the use of health care services
- Organizes activities to improve the quality of life of the people in their community

- Maintains excellent records and submits them regularly to supervisor

- Attends village development committee meetings if it exist, if not help the village in setting up one

J. Summary

Conclude the session by reminding the participants the goal and objectives of the training, and what is expected from the participants in terms of their roles as VPEs. In summary their roles are:

- Attend the training for Peer Educators and complete the training
- Conduct weekly visit to households of under-five children
- Provide Mothers with the right information, skills, support and educational materials on child survival strategies
- Reinforce mothers learning by providing counseling and support during home visits
- Refer mothers with sick under five children to the nearest health facility and also encourage mothers to seek the services of the health facility

K. REVIEW/EVALUATION

1. Mention the names of 2 other participants
2. What are the objectives of the workshop
3. State 2 training methods that will be used to enhance learning
4. List 3 Job responsibility of VPEs

TOPIC: STATUS OF UNDER-FIVE CHILDREN IN NIGERIA

DURATION: 30 Minutes

Learning Objectives

Participants will be able to:

1. Explain who under-five children are
2. Mention 4 reasons why particular care has to be given to children of this age group
3. Name 5 common infections that affect children in this age group
4. Explain the need for home visit to be made to under-five children

Training Materials

- ✓ Flip Sheets
- ✓ Markers
- ✓ Flip sheet stand
- ✓ Pictorials

A. Introduction

Introduce the session by explaining that under-five children are children below 60 months old, and that at the moment the total number of under-five children in Nigeria is about 25 million (almost one and a half of the population size of Ghana). Despite this high number of under-five children, more children are being born each day and many more are dying, especially in poor, rural and illiterate households.

B. Why care for Under-five Children?

1. Ask participants to brain storm why particular attention should be paid to children of this age group in our communities.
2. Note their responses on the flip sheet
3. Comment and add clarify as follows
 - a) The first 1000 days on earth is very important in the life of a child, if anything negative affect their health, nutrition and psychology they may never recover from it even when they become adults
 - b) Children under-five years, especially those below three years are particularly vulnerable to a lot of diseases, and sexual violence because their speech is not yet clear. They may not be able to tell their parents how they feel, what someone has done to them, or what they want.

- c) If we allow more children to die, their mothers will want to have another pregnancy to cover up for the child that died and this could put their mothers in danger of dying at child birth. So there is a link between deaths of under five children and the number of women dying at child births
- d) The number of under-five children that die in a country is used to measure how developed the country is. If so many children die, that country is considered to be under-developed and if few die, the country is considered as developed.

Children are the future of any nation. Any nation that wants to be great, will certainly invest in the lives of her children below five years in every area that will benefit the country, community, families and the children themselves.

C. Common infections affecting Children under five years

1. Request a volunteer to list five common infections affecting children under five years

2 Note the responses on the flip chart, some of the responses may include

- Fever
- Convulsion
- Malaria
- Diarrhoea
- Vomiting
- Measles

3. Add that the impact of some of these infections can be reduced if the mother of the child is well informed, and has skills on what to do within the household to prevent the disease and what to do if the child is sick. It is known that some of the mothers in our communities may not be educated, but they are not stupid, if we tell them how to care for their children they will follow the steps.

D. Home visit

1. Ask if any of the participants has been involved in home visit?

2 Request that the participant explain to the class the process of conducting home visit and the importance of conducting home visit.

3. Note the key areas in the conduct of the home visit and clarify as follows

Home visit is the act by a health worker/ volunteer of going to households within a community to provide information, support and encouragement concerning important health issues affecting the household members and make referrals to the health facility when required.

Also, conducting home visits will provide the opportunity to the health worker to find out valuable information about the living conditions of the families, hygiene conditions and household arrangement and cleanliness.

To provide counselling to other household members, conduct growth monitoring and promotion, and make prompt referral when necessary

The health worker can identify a day in week, when the mothers can be met with in a group for provision of health education and food demonstration. This should be done when it will not interfere with the socialisation roles of the mother in the home and other form of livelihood.

Explain to the participants that in the course of implementing this project they will be expected to visit the identified households of mother and child pair under three years.

E. Conclusion

End the session by emphasizing the need for particular attention to be paid to children under-five years old in the community. Also encourage the participants that they can contribute to the development of the children in the community.

Review/ Evaluation

1. Explain who under-five children are
2. Mention 4 reasons why particular care has to be given to children of this age group
3. Name 5 common infections that affect children in this age group
4. Explain the need for home visit to be made to under-five children

TOPIC: CONCEPT OF PRIMARY HEALTH CARE

DURATION: 30 Minutes

Learning Objectives

Participants will be able to:

1. Explain Primary Health Care
2. Describe the principle of PHC
3. State the elements of PHC
4. Describe the strategies for PHC
5. Explain the difference between medical care and PHC
6. Explain the role that VPEs can play to ensure the success of PHC programmes

Training Materials

- ✓ Flip sheet stand
- ✓ Flip sheets
- ✓ Markers
- ✓ Pictorials

A. Introduction

1. Display the objectives and read out each one followed by an explanation
2. Introduce Primary Health Center(PHC)

Good health is a fundamental right of every human being regardless of his/her race, creed, economic or social status. In order for this to be effective there is the need to expand the medical care system, in view of its limitations, to the ideals of Primary Health Care. Explain to the trainees that the PHC lies under the domain of the Local Government and not the State or the Federal Government. Hence it is the responsibility of the LGA to provide all the items and good conditions of care in PHCs.

B. Definition of PHC

1. Define PHC in a way that it will be easily understood
2. Explain that PHC is a health programme of the people by the people for the people. It is very important that everyone should participate in one way or another to ensure its success

3. Explain further that PHC can be defined as the care that is universally accessible to individuals and families in the community through their full participation, in the spirit of self-reliance and self-determination, at a cost that the community can afford

PHC is different to medical care. Medical care helps individuals who call at hospitals and dispensaries for treatment after they have fallen ill. The concept of PHC entails finding ways of preventing disease and promoting health in families and communities, while also attempting to reduce the total number of illnesses. The concept of Primary health care seeks to provide health services for community people within walking distances from their homes.

C. Principle of PHC

1. Explain the principle of PHC to participants
2. Ask the participants to brainstorm what they consider to be essential health care necessary for healthy living
3. Note points. Fill in missing information and explain each point to ensure better understanding

The principle of PHC is to provide the essential things needed for healthy living

The essentials needed for healthy living are:

- Water
- Food
- Sanitation
- Health care that should be:
 - available and accessible to all people
 - acceptable to the community
 - appropriate and relevant to the main health problems of the area.

D. Components of PHC

1. Explain to participants that the World Health Organisation (WHO) has recommended 11 components or elements of PHC to ensure that individuals or communities enjoy good health.
2. Ask participants to brainstorm the elements of PHC
3. Note responses on the flipchart

4. Clarify and fill in missing points
5. Explain that each of these elements will be fully discussed during the course of the training programme

To achieve health for all, the WHO has recommended 11 components of Primary Health Care. Each of the components has a goal to work towards and achieve. As many of these elements as possible should be encouraged by VPEs in their communities to ensure health for all community members especially mothers and their children under five years old.

PHC Components/Elements

- i) Health education
- ii) Treatment of locally endemic disease e.g. malaria
- iii) Provision of essential drugs
- iv) Maternal child health/family planning
- v) Immunisation
- vi) Good nutrition and adequate food supply
- vii) Treatment of minor ailments and injuries
- viii) Sanitation and good water supply
- ix) Mental health
- x) Care of the aged
- xi) Dental care

E. Strategies of PHC

1. Review the definition of PHC
2. Ask participants to reflect on the definition and elements of PHC
3. Review the elements with participants
4. Guide discussion on the ways that the components/elements of PHC can be implemented
5. Note contributions
6. Expand on suggested strategies for implementation that:

There are various ways of implementing PHC to ensure that the goal of health for all is achieved.

- i) Intersectoral cooperation: PHC programmes should be set in a context of integrated development.
- ii) Housing, transport, education, agriculture etc. should also be considered.
- iii) The prevention of disease and the promotion of health.
- iv) Basic infrastructure: establishing health activities within the reach of the family i.e. at an average 5kms walking distance.
- v) Referral system: connecting health facilities through various mechanisms to the hospital service.
- vi) Auxiliary health workers need to be trained to work in health facilities
- vii) Participants need to be trained to work in the communities
- viii) Health education is also essential
- ix) Community participation: each community should be actively involved.
- x) Health care should be relevant to the main health problems of each community.
- xi) Essential drugs for treating common conditions should be provided
- xii) Cost effective and self-reliant: the care should be within the means of the community

Emphasise that the most important strategy is for people to work together and understand the importance of making the system work as the result will benefit everyone in the community.

F. Difference between Medical Care and PHC

1. Introduce the topic as: Medical care and PHC complement each other, but there are differences between the two.

2. Guide discussion on the difference between medical care and PHC approach.

3. Note contributions and expand as:

Differences		
	Medical care	PHC
a.	The medical system is vertical	PHC functions best through intersectoral cooperation
b.	Curative – it emphasises treatment and drugs, doctors and hospitals or auxiliaries	Mainly preventive and promotive
c.	Treatment of individuals who are sick	Prevents sickness in healthy people in the community and treats the sick
d.	Health is seen as a technology brought in from outside	Health promotion is a family and community activity
e.	Discourages traditional medicine and ignores culture	Encourages health, and the positive aspects of traditional medicine and culture
f.	It is expensive with a strong bias towards urban areas and hospitals	It is less expensive with a bias towards equal distribution, and rural and urban poor areas
g.	Often financed by government	Partly supported by community and self-reliance
h.	Patients depend on doctors, nurses and health services	Helps individuals and communities to become more capable of looking after themselves

4. Explain each point for better understanding

5. Emphasise that the PHC approach has been designed to meet the health needs of the people by the people, anytime, anywhere. But it is very important that people work together towards achieving the success of PHC.

It is essential for VPEs to know that medical care is equally important as it is necessary for dealing with cases beyond the scope of the VPEs. Every health worker in any country needs both systems of care.

Summary

Summarize the concept of PHC

- The meaning
- The principle
- The elements
- The strategies

End the session by emphasizing that the primary health care concept brings health to the people and succeeds when communities and families participate actively. It is therefore the role of VPEs to mobilize the communities to ensure that the system works.

REVIEW/EVALUATION

1. State in your own words what you understand by the PHC concept.
2. State 4 elements of PHC.
3. Mention 4 differences between medical care and PHC
4. What roles can VPEs play to ensure the success of PHC?

TOPIC: COMMUNITY MOBILISATION/PARTICIPATION

DURATION: 1 Hour

Learning Objectives

Participants will be able to:

1. Describe a community
2. Describe community mobilisation
3. State reasons for involving the community in health activities
4. Explain factors that increase “togetherness” in a community
5. Describe the process of community mobilisation.

Training Materials

- ✓ Flip sheet stand
- ✓ Flip sheets
- ✓ Markers
- ✓ Pictorials

A. Introduction

1. Start the session with a cultural proverb that depicts community work or community participation, *if the heavens are coming down, you cannot hit your chest.....*
2. Ask participants to complete and explain the proverb
3. Display the objectives, read them out, and ask participants to comment
4. Respond to participants’ comments if necessary.

B. Definition of Community

1. Ask participants to brainstorm the meaning of community
2. Note their comments, give answer as: **A community** is a group of people living in the same geographical area and sharing the same norms, cultural needs and values. Guide discussion on the definition to make sure participants understand.
3. Explain to participants the meaning of community participation as: **Community participation** is an activity carried out by a group of people who agree to work together for the improvement of the community.

C. Reasons for Involving the Community in Health Activities

1. Guide discussion on the reasons why community members should be involved in health activities.
2. Note the responses as:
 - Promotes self-reliance on the part of the community
 - Allows for continuity of any programme
 - The community knows itself best and can therefore identify available resources that can be contributed to enhance the success of programmes e.g.
 - *people
 - *ideas
 - *equipment
 - *land
 - *time

D. Factors that Increase Community “Togetherness”

1. Request that the participants brainstorm the factors that increase “togetherness” in a community.
2. Note responses on flipchart and fill in missing points as:
 - Common needs
 - Common wants
 - Common problems
 - Achievements
 - Employment
 - Festivals; harvest ceremonies
 - Similar societal activities
3. Discuss each point extensively to ensure understanding of the issue.

E. Process of Community Mobilisation

1. Guide discussion on steps involved in mobilizing the community
2. Encourage participants to contribute
3. Record contributions on the flipchart and clarify

4. State the process as:

- Identify the target community
- Identify leaders and organisations within the community.
- Introduce yourself
- State the purpose of your visit
- Arrange a meeting with community leaders to discuss the programme
- Keep minutes of meetings and share them with members
- Keep appointments
- Involve other workers within the community.
- Arrange meetings with members of the community
- Meet members of the community together with community leaders and other workers (health and health related) to discuss the programme.
- Explain the purpose of the meetings. Brainstorm strategies and activities for implementation, monitoring, supervision, evaluation, continuity and sustainability.
- Plan for regular meetings.

F. Summary

1. Summarize all points that have been highlighted in the session.
2. Clarify points and end session.

REVIEW/EVALUATION

1. What is a community?
2. What do you understand by community participation?
3. State 3 reasons why communities should be mobilized.
4. What factors will increase community “togetherness”?
5. What is the process involved in community mobilisation?

TOPIC: BREASTFEEDING

DURATION: 1 hour

Learning Objectives

Participants will be able to:

1. Explain the benefits of Exclusive breastfeeding
2. Explain how and when should mothers breastfeed
3. Give an educative talk on the importance of breastfeeding
4. Describe how to manage breastfeeding problems

Training Materials

- ✓ Flip sheet stand
- ✓ Flip sheets
- ✓ Markers
- ✓ Pictorials

A. Introduction

1. Ask participants what they think of breastfeeding
2. Note responses
3. Introduce the topic as:

Children-loving people all over the world are worried that some mothers are not fully breast-feeding their babies for reasons other than breastfeeding problems and this has led to more babies’ deaths due to diarrhoea, malnutrition, vomiting etc.

Mothers who fail to breastfeed their babies do not realize that breast milk is the most nutritious and valuable food for the baby.

It is very important that pregnant women be encouraged to start breastfeeding as soon as the baby is delivered (within 1 hour after birth) and breastfeeding should continue for at least 2 years.

A. What is Exclusive breastfeeding

1. Ask participants to brainstorm on the term Exclusive breastfeeding
2. Note responses
3. Clarify and make contributions as:

Exclusive breastfeeding is the giving of **only** breast milk to children from birth till 6 months, without any additional food or drink or herbs not even water. After birth, the mother should be encouraged and supported to put the infant to breast.

4. Ask participants to brain storm on the benefits of Exclusive breastfeeding
5. Note responses and clarify as thus
 - It is natural and readily available
 - It saves time and does not need any preparation
 - It is at the right temperature, it is neither too cold or too hot for the baby
 - It contains all food nutrients for the baby's growth and development
 - It makes the baby grow stronger and healthy
 - It provides protection against diseases as it contains certain immunity
 - Breastfeeding ensures that baby's milk is clean at all times i.e. from germs and contamination.
 - It enhances mother and child relationship.
 - It assists the womb to contract, thus preventing abnormal bleeding after child birth
 - It protects the mother from pregnancy during the first 6 months after child birth provided that breast milk is the only food the baby consumes and frequently
 - It reduces the chances of having breast cancer.

B. Frequency of Breastfeeding

1. Guide a discussion on the frequency of breastfeeding and the importance of the first yellow milk- *colostrum* in the breast.

2. Emphasise that the first yellow milk produced in the breast is not only very rich in nutrients but also helps to protect the baby's body from some illnesses and diseases
3. Ask participants to discuss cultural practices, including taboos and myths about breastfeeding in their families and in the community.
4. Note points and guide discussion on how to deal with harmful practices and encourage good ones.

Mother should be encouraged to breastfeed the baby as often as the baby requires, mothers should not wait until babies cry, before putting them to breast.

C. Breast Feeding Problems

1. Ask participants to brainstorm on the problems of breastfeeding that they have seen or heard.
2. Record responses on the flipchart.
3. Expand on the problems and explain the management of each problem.
 - Sore/cracked nipples
 - Engorged breasts
 - Insufficient milk supply
 - Breast abscess

i. Sore/cracked nipples

Causes

- Improper placing of baby to the breast
- Baby sucking tip of the nipple

Management

- Nipples should be cleaned with cotton wool soaked in liquid paraffin or other lubricant to prevent dryness and further cracking.
- Instruct mothers that the breast and nipples should be washed without soap to remove the paraffin before breastfeeding.

- Teach the mother how to position the baby to the breast with the nipple well placed in baby's mouth.
- Advise the mother to feed the baby last on the affected breast if the breast is not empty. Advise her to express the milk into a clean cup and give to the baby with a clean spoon, but if the baby is already satisfied the expressed milk should be discarded.
- Advise the mother to expose the affected breast to the fresh air.
- If the affected breast is too sore for the baby to suck on, the milk from the affected breast should be expressed into a clean cup and given to the baby with a teaspoon.
- If there is no improvement, refer the mother to the health clinic.

ii. **Engorged Breast**

Causes

- Breast milk not fully emptied causing swelling.

Management

- Express excess milk into a clean cup after breastfeeding and give to baby with a spoon.
- Breastfeed frequently.
- Bathe breast with hot water and compress breasts to express milk.
- Place cool towel on breast after feeding to relieve discomfort.
- Support breast with light brassier that is not tight
- Baby should be allowed to suck well in order to empty the breast

iii. **Insufficient breast milk**

Causes

- Poor health of mother

- Mother is undernourished
- Baby is either too small or weak to suck or has other deficiencies that make it difficult to suck
- Some first time mothers can be afraid to breastfeed resulting into a psychological disorder

Management

- Advise the mother to take plenty of fluid and eat balanced diet.
- Encourage the mother to rest and avoid worries.
- If the baby is not developing refer the mother to health centre.

iv Breast Abscess

Causes

- Improper emptying of the breast leading to infection and accumulation of pus in the breast.

Management

- Proper emptying of the breast
- Place a cool towel on the breast to relieve discomfort.
- Refer the mother to the health centre for further management.

D. Role Play

1. Ask participants to volunteer to role play.
 - a) Three mothers, each with one of the four
 - b) Three participants talking to each mother about the causes and management of each of the four problems.
2. Ask others to listen and comment after the role play.
3. Note comments and respond as needed

REVIEW/EVALUATION

1. When should the new born baby be put to the breast?
2. What are the benefits of exclusive breastfeeding to the mother and the baby?
3. State 4 common problems of breastfeeding and describe the management of these problems.

TOPIC: COMPLEMENTARY FEEDING

DURATION: 1 HOUR

Learning Objectives

The participants will be able to:

1. Explain to mothers what is meant by complementary feeding.
2. Explain the reasons for complementary feeding
3. Discuss the types of food used in preparing complementary feeding.
4. Demonstrate how to prepare a complementary meal.
5. Explain to mother the important tips to note about complementary feeding.

Training Materials

- ✓ Flip sheet stand
- ✓ Flip sheets
- ✓ Markers
- ✓ Samples of some food stuff
- ✓ Cooking stove, pots and cooking spoons
- ✓ Pictorials

A. Introduction

1. Display the resource materials and posters
2. Put up the objectives and read out to participants
3. Start the session with an appropriate song

B. Definition

1. Request the participants to brainstorm on their understanding of the word complementary feeding.
2. Give the correct definition and correct misconceptions

Complementary feeding is the introduction of extra food into the diet of an exclusively breastfed baby

C. Reasons for Complementary feeding

1. Explain the reasons for complementary feeding as:
 - As a complement to the breast milk, because the breast milk does not satisfy the baby after the age of six months
 - To prevent the baby from malnutrition
 - To ensure that the child develops and is healthy

D. Process of introduction of Complementary feeding

1. Explain to participants that introducing a complementary feeding diet should have a process to enable it to succeed.
2. Ask participants to brainstorm on when complementary feeding should start.
3. Note responses and clarify as:
 - Complementary feeding should be carried out gradually by introducing one type of food at a time.
 - Semi-solid diet should be introduced gradually as the child grows older and gets used to the food.
 - This can be introduced to a child from the age of 6 months.

- Mother should continue to breastfeed until the child is 18 – 24 months.

E. Reasons for a Gradual Complementary feeding Process

1. Guide discussion on the reasons for a gradual complementary feeding process.
2. Note responses, clarify and fill in points as:
 - To allow the child time to get used to the new diet.
 - To allow the stomach to adjust gradually to the increased quantity of food being introduced.
 - To allow the digestive system to adapt to the new food.
 - To note if the child reacts to the food item being introduced so as to take appropriate action.

F. Stages of Complementary feeding and Types of Food to Introduce

1. Ask participants to brainstorm on when complementary feeding is commonly introduced by mothers in their communities.
2. Note responses.
3. Describe the 5 stages participants should advise mothers to follow when complementary feeding a child as:

There are five stages of complementary feeding a child:

Stage I: birth to 6 months

Mother should breastfeed the baby exclusively on only breast milk.

Stage 2: 6 – 8 months

Mother should continue with breastfeeding. Semi-solids like liquid pap should contain grind dried fish or cray fish, roasted melon seeds or roasted groundnut and egg yolk.

Other food such as mashed chicken or liver soup without pepper could also be introduced. Add fruit juice e.g. orange mashed pawpaw or banana.

Beans, rice, yams or potatoes can be eaten with fish chicken or liver soup without pepper.

Stage 4: 9 – 12 months

Mother should continue to breastfeed the baby.

She should also feed the baby with liquid pap that contains any of the following powdered food: crayfish, soya beans, roasted melon seeds or groundnut, egg yolk, dried fish

Solids such as mashed yam, mashed rice with chopped vegetables, okra, fish, chicken or edible insects can be given. Mashed beans with grind crayfish is another option. Locust beans which are highly nutritious, tomato juice, banana or mashed pawpaw can also be given.

Stage 5: 12 months and above

At 12 months, the child is old enough to eat the same food as an adult. It is very important that breastfeeding should continue until the baby is 18 – 24 months old.

It is important to give the baby body building food to make the child grow well and prevent sickness e.g. meat, beans, liver, chicken and edible insects. Energy food such as garri, yam, yam flour, millet, flour, corn flour and rice is also important.

NOTE:

Energy food on its own without body building food is very dangerous, this is what causes *Kwashiokor*. A baby fed only on such food, will have a pot belly and may die of malnutrition.

Demonstration of Complementary feeding Diet

1. Demonstration how to prepare one of the complementary feeding diets by cooking bean and adding grind dried fish or crayfish.
2. Explain each process from the beginning to the end.
3. Serve the prepared meal.
4. Guide discussion on the demonstration.
5. Note responses.

6. Ask participants to brainstorm other types of complementary feeding diet.
7. Note responses, contribute and advise participants to always encourage mothers on cleanliness.

When complementary feeding is introduced the foods need to be well cooked and mashed.

Inexpensive nutritious food can be made by combining at least one food from each food group:

- **Body building food** (protein): meat, eggs, chicken, fish, beans, soya beans, vegetables and nuts.
- **Energy food** (carbohydrate): rice, corn powder, yam, potatoes and maize.
- **Energy storing food** (fats and oil): local oil.
- **Protective food** (vitamins & minerals): vegetables, fruits, liver, eggs and milk.

Give semi-solid protein food after each breast-feeding.

Start with a small amount and increase gradually as baby grows, do not overfeed the baby.

G. Tips on complementary feeding

1. Explain some tips on complementary feeding a child to participants as:
 - Baby should be fed with a clean spoon and cup
 - The child's surroundings should be kept clean regularly.
 - The child's hands should be washed regularly as a crawling child likes putting its fingers in its mouth.
 - Bottle feeding should be avoided as it will cause diarrhoea.
 - Introduce a soft diet from 4 months to 1 year of age.

- Baby should be breastfeed from birth and if possible until the baby is 2 years old.
- 2. Encourage questions and provide answers.
- 3. Ask volunteers to arrange the foods they have brought to the session into the 5 main groups of food (as discussed under Nutrition).
- 4. Commend and clarify.
- 5. Review the main food groups as discussed under Nutrition
- 6. Review a balanced diet.
- 7. Stress the importance of complementary feeding with body building foods and introducing food gradually in the form of semi solids
- 8. Correct misconceptions especially on animal protein, e.g. meat, eggs, chicken that is culturally believed will encourage a child to steal.

Summarize the session.

End the session with an appropriate song.

REVIEW/EVALUATION

1. State the 5 stages of complementary feeding a child.
2. Have participants prepare a complementary feeding diet in groups of 6.

TOPIC: WELL BABY CLINIC (INFANT WELFARE CLINIC)

DURATION: 40 minutes

Learning Objectives

The participants will be able to:

1. Explain the meaning of Well Baby Clinic (Infant Welfare Clinic).
2. State the reasons why mothers should take their babies to the Infant Welfare Clinic.
3. Explain to mothers the importance of birth registration.
4. Name the referral centres within the community.

Training Materials

- ✓ Flip sheet stand
- ✓ Flip sheets
- ✓ Markers
- ✓ Birth Certificates
- ✓ Pictorials

A. Introduction

1. Display the learning objectives and read them out.
2. Ask participants to comment and respond accordingly
3. Ask participants if any of them is familiar with the Well Baby Clinic
4. Note responses
5. Introduce the topic as:

Possible responses

- Infant welfare
- Health centre
- Maternity hospital

6. Ask participants to brainstorm on the other name for Well Baby Clinic
7. Clarify that Well baby Clinics can also be referred to as Infant Welfare Clinics

B. Definition

It is a health centre where mothers and their babies are seen from six weeks after delivery until the baby is one year old, and even beyond one year old to check baby's growth and development and to be taken care of

C. Reasons for the Use of Well Baby Clinic

1. Ask participants to brainstorm on the reasons for taking babies to the Well Baby Clinic.
2. Note responses and expand as:

- To check and monitor the growth and development of the child, right from birth till five years
 - To identify babies who are not getting enough of the right food and counsel
 - To get education and information on breastfeeding
 - To immunize the baby
 - To check the baby's weight
 - For mothers and fathers to get counselling on how to care for their babies
 - To get counsel on baby's nutrition and on the preparation of infant foods e.g. complementary feeding diet
 - To get counsel on birth registration
 - To get information on Family Planning
3. Explain further that one of the reasons is for birth registration. This is of importance not only to the family but for the baby and the country.

D. Importance of Birth Registration

1. Explain to participants that what birth registration means

Birth Registration is the official recording of the birth of a child within a community by either parent, to which a certificate is given to the parents showing the name of the child, the sex, the date of birth, place of birth and other vital information. Birth registration can be done at the hospital where the child is born, also at the Local government council.

2. Ask participants to brainstorm the importance of birth registration
3. Note points and fill in missing points as:
 - It helps the family to remember the dates of birth of their children.

- It enables health providers to know age of the child as to accord the child the right health treatment and also monitor the child's growth
- It helps family to plan for the baby's future e.g. admission to primary school.
- It helps the Government to plan facilities for the community e.g. homes, health centres, hospitals, schools, light, water etc.
- It helps the Government to know the number of babies born at any given time and be able to plan for their well-being.

E. Referral Centres

1. Ask participants to brainstorm on the referral centres that are used for Well Baby Clinics and birth registration.
2. Note responses and expand on points as:
 - Local Government Health Centres
 - State Government Hospitals
 - University Teaching Hospitals
 - Community Health Centres
 - Health Posts
 - Local Government Offices (Birth Registration)
3. Summarize the session and end with an appropriate song

REVIEW/EVALUATION

1. What is a Well Baby Clinic or Infant Welfare Clinic?
2. What are the reasons for using Well Baby Clinics?
3. What is birth registration?
4. Why is it important to register a baby's birth?
5. Where and when should babies' births be registered?

IMMUNISATION

DURATION: 1 hour

Learning Objectives

The participants will be able to:

1. Explain to mothers or the community what immunisation is
2. State the importance of immunisation to the health and growth of the child
3. Name the diseases that can be prevented by immunisation
4. Describe the current immunisation schedule
5. Explain to mothers the possible reactions to some vaccines and home management
6. Refer mothers and children for immunisation at the health center
7. State the role of VPEs in promoting immunisation programmes

Training Materials

- ✓ Flip sheet stand
- ✓ Flip sheets
- ✓ Markers
- ✓ Immunisation cards
- ✓ Pictorials

A. Introduction

1. Display written objectives on the wall and read out each objective to participants.
2. Explain each objective to ensure better understanding.
3. Introduce the topic as:

The death rate for children under 5 years in Nigeria is very high. Most of the causes of death would be preventable if ignorance about the causes, prevention and management were removed. Also these deaths could also be avoided if mothers had information on what to do when their children are sick.

B. Preventable Childhood Diseases

1. Explain that there are some preventable childhood diseases that cause children to die when they are under 5 years old.
2. Ask participants to brainstorm these childhood diseases that cause children to die.

3. Note the responses.

4. State the childhood killer diseases, as:

Possible responses may include:

- 'Abiku'
- Cough
- Witch craft
- Poverty
- Exposure to sun
- Malnutrition
- Fever, convulsion

The childhood killer diseases are:

- Tuberculosis
- Poliomyelitis
- Diphtheria
- Whooping cough
- Measles
- Tetanus
- Malaria
- Diarrhoea

C. Prevention of Childhood Diseases

1. Ask participants if they have ever heard of how these diseases can be prevented.

Note points and clarify.

Possible responses may include:

- Giving medicine
- Use of incisions on baby's face
- Prayers
- Use of herbal medicines
- Supernatural protection.

2. Tell participants that by immunisation, some childhood diseases can be prevented.

Definition of Immunisation

3. Ask participants to explain the word "immunisation" in their own words.

4. Note responses and explain as: A way of protecting people, especially pregnant mothers and children, against certain infections or diseases using vaccines which are given by injection or oral drops.

D. How Immunisation Work

1. Describe as simply as possible how immunisation works to prevent diseases.

When vaccines are injected into the body, such vaccines allow the body to produce body soldiers that have the ability to fight against these strange diseases when they enter the body. However, a child that those not receive immunisation will not have the soldiers in the body to fight against the diseases.

E. Description of Preventable Diseases

1. Ask participants to name in their local languages the diseases that immunisation can prevent
2. Note responses on flipchart
3. Share your experiences about the diseases that immunisation can prevent as:

i. Tuberculosis (TB)

- This is a crippling (chronic) disease that spreads easily (contagious) and anyone can get it.
- The disease affects the organs in the chest (lungs) and the body and the bones. It may destroy these organs and cause death.
- The disease makes people cough a lot with blood being coughed up.
- If not prevented or treated very early, it may cause death

ii. Polio (Poliomyelitis)

- Polio is very common among children who are under 2 resulting in the affected child being paralysed in one or two legs.
- Sometimes the paralysis may affect other parts of the body making the person bedridden and unable to walk again.
-

iii. Diphtheria

- If this killer disease is not prevented, it causes the lining of the tongue, throat and sometimes the lips and the nose to be covered with yellowish grey coating making it difficult for the child to breathe.
- The neck of the child becomes swollen and the breath has a bad smell.

iv. Whooping Cough

- Whooping cough is very dangerous in babies under one year.
- The cough begins like any common cough with a running nose.
- It later becomes very bad and makes the child cough a lot, vomit or stop breathing.
- If the disease is not prevented, most babies die.

v. Measles

- Measles is a severe infection that is very dangerous in children especially children that are undernourished.
- It may start with fever, cough and runny nose before the other symptoms are seen.

vi. Tetanus (lockjaw)

Tetanus is caused in a new born child when germs enter the umbilical cord because of a lack of cleanliness e.g. using rusted razor blades, used blades, broken bottles, bamboo cuttings or knives to cut the cord during delivery. Tetanus can also be caused by circumcision or incisions. Tetanus can enter the skin through open wounds, animal bites and injuries from pointed wires. Anybody can get tetanus but new born babies are at high risk. If not prevented, it causes death in babies.

4. Describe as simple as possible each of the preventable diseases. Illustrate with diagrams showing various victims with the diseases and paste the diagrams on the wall.
5. Encourage questions and respond accordingly.

F. Types of Vaccine

1. Ask participants to brainstorm the types of vaccine that are used to immunize children using the local word or slang, and note on the flipchart.
2. State the names of the vaccines and use pronunciation that will ensure easy understanding.

Name of disease	Type of vaccine
1. Tuberculosis	BCG
2. Poliomyelitis	Oral Polio
3. Diphtheria	DPT
4. Whooping cough	DPT
5. Measles	Measles
6. Tetanus	DPT

G. Immunisation Schedule According to Various Ages

1. Guide discussion on the immunisation schedule participants are familiar with.
2. Note responses. Put up immunisation schedule chart and explain as:

BCG: To be given at birth – 11 months or at first contact up to 2 years.

POLIO : To be given during the first week of birth; thereafter to be given three more times i.e:

- At 6 weeks
- At 10 weeks
- At 14 weeks

DPT: There is one vaccine for prevention of whooping cough, pertussis, diphtheria and tetanus. To be given as follows:

- At 6 weeks
- At 10 weeks
- At 14 weeks

MEASLES: To be given at 9 months

TETANUS TOXOID: Five doses given, starting at 15 years onward and during pregnancy (for prevention of tetanus in adults).

H. Use of Immunisation Cards

1. Ask participants who have seen or used immunisation cards before to explain how to interpret the entries. (This will enable the trainer to assess participants' level of understanding of the use of immunisation cards).

To fill in the information required on the card such as Name, Address, Type of Immunisation, Batch No and Date of Next Appointment.

2. Distribute a sample of the immunisation card to each participant.
3. Explain the entries on the card matching with the large immunisation poster.

I. Possible Post Immunisation Reaction and Management

1. Ask participants to brainstorm the possible post immunisation reactions that mothers usually complain of and the advice given.
2. Note responses on the flipchart.
3. Correct rumours, misinformation and taboos.
4. Explain the possible reactions and management as:

Pain: Pain or swelling at injection site.

Management:

- If DPT or measles vaccine is administered, the injection site can be rubbed.
- Reassure the mother that the pain and swelling is temporary and will disappear
- Apply cold compress to reduce swelling.
- Do not apply hot compress on the injection site.

Fever: Fever is likely to occur after administration of DPT vaccine.

Management:

- Take off baby's clothes and expose to fresh air.
- Give plenty of breast milk and fluids.
- Sponge down the body with luke warm water i.e. not too cold water not too hot
- Give paracetamol tablet as follows:
Under 5 years: ½ tab 3ce a day x 3 days
Under 1 year: Syrup Paracetamol 3ce a day x 3 days
- If no improvement refer to the clinic.

Demonstration of How to Manage a Baby with Fever

1. Demonstrate using a baby dolly, jerrycan filled with cold water, towel and sponge.

2. Demonstrate sponge bath as follows:
 - Remove clothes from doll
 - Wet sponge with water and squeeze out water
 - Wipe the whole body of the doll
3. Stress that the procedure should be repeated several times until the child is cool.
4. End the session by stressing the importance of sponging down a febrile baby and referring mother and baby to the clinic if no improvement.

J. Benefits of Immunisation

1. Ask the participants to discuss in 2 groups:
 - Group I:** Benefits of immunisation.
 - Group II:** Their roles as health workers in promoting immunisation programmes. Facilitators should work with each group and provide guidance.
2. Call participants together after 10 minutes. Request the representative of each group to present. encourage others to comment.
3. Commend each group and fill in missing information as :

Responses from the groups may include:

- Prevents the child from contracting any of the 6 childhood killer diseases.
- It reduces the spread of preventable disease
- It saves lives
- It ensures that people, especially children under 5, stay healthy. Since a healthy nation is a wealthy nation, immunisation of children is a step towards ensuring a healthy nation.

K. Role of VPEs in Promoting Immunisation

1. Ask participants to brainstorm their roles in the promotion of immunisation.
2. Note responses and fill in missing information as:

- Get well educated about facts on immunisation to ensure that correct information is given.
 - Introduce Health Education to mothers and communities.
 - Encourage, remind and, if possible, escort mothers to the clinic to get their babies immunized.
 - Plan with health workers to travel to villages to provide immunisation to pregnant mothers and babies.
 - Mobilize people to attend such programmes
 - Dispel rumours and correct misconceptions
 - Follow up with mothers whose children have been immunized and reminding them to keep their next appointments.
3. Ask each participant to recall at least 3 benefits of immunisation and 3 roles VPEs can play in the promotion of immunisation.
 4. Note responses and fill in the missing information.
 5. Ask participants to volunteer to role-play giving a talk to a group of women with their babies on immunisation.
 6. Ask others to comment, note comments and respond as necessary.
 7. End the session by asking the participants to sing a song on immunisation.

Conclude the session by stressing that 40% of children's death could be averted if only mothers take their children to the health center for immunisation.

REVIEW/EVALUATION

1. Explain what immunisation is, and give 3 benefits of immunisation.
2. Name 6 preventable childhood diseases
3. How can childhood diseases be prevented?
4. Name the 6 types of vaccine that are given to prevent childhood diseases
5. When should the immunisation of babies start?
6. State 4 roles that VPEs can play in promoting immunisation programmes.

GROWTH MONITORING AND PROMOTION

DURATION: 1 hour 30 minutes

Learning Objectives

The participants will be able to:

1. Define child growth
2. State the signs of a healthy growing child.
3. State the reason for retarded growth.
4. Describe how to assess and monitor a child's growth
5. Describe what growth monitoring is.
6. Explain reasons for growth monitoring.
7. State the requirements for growth monitoring.
8. Explain the growth monitoring procedure
9. Explain what the growth chart is used for.
10. Use and interpret the growth monitoring card.

Training Materials

- ✓ Flip sheet stand
- ✓ Flip sheets
- ✓ Markers
- ✓ Growth Chart
- ✓ Pictorials
- ✓ Weighing Scales
- ✓ Measuring tapes
- ✓ Chalks

A. Introduction

1. Display and read out the session's objectives.
2. Have all the necessary illustration ready.
3. Start the session by explaining that for a child to survive, it is very important to keep the child healthy.
4. Ask participants to brainstorm on their understanding of 'child growth'. Note their contributions.

B. Definition of Child Growth

1. Provide the definition as: It is the process involving the gradual development of the child's body, height and weight.

2. Expand on the definition by explaining further what gradual development of the body, height and weight means. If a child is growing well, the child's weight increases every month, but if not the child will be losing weight
3. Put up posters of healthy growing children and children with retarded growth to guide the discussion and for comparison.

a. Signs of a Healthy Child

1. Ask the participants to brainstorm the signs that will enable them to know that a child is a healthy growing child.
2. Note points on the flipchart.
3. Expand on the participants' points as:
 - Has good appetite
 - The growth of a healthy child will correspond to his/her age
 - Looks very healthy
 - Has ability to lie flat on the stomach and raise the head without support at 1 month.
 - Can sit without support between 6 – 9 months
 - Ability to take a few steps without support between 12 – 18 months.
 - Ability to say a single word between 5 – 9 months.
 - Ability to speak a few sentences between 12 – 18 months.

Note:

A child that is unable to:

- sit by 9 months
- walk by 18 months, or
- talk by 36 months,

These conditions described above are referred to as **Motor Milestones** they enable health service providers to know if the child is growing well. Any child with any of the above conditions must be referred to the clinic at once.

A. Retarded Growth

1. Ask participants to brainstorm some of the conditions that can contribute to retarding child's growth.
2. Note points, clarify and fill in missing points and correct misconceptions and myths:
Retarded growth can be caused by:

- Malnutrition - either not eating enough of nutritious food or eating the wrong food. This is inclusive of taking the child off breast milk, or too soon introduction of the child to family diet that is poor in nutritional value.
- Early and poor complementary feeding
- Lack of proper care
- Not immunizing the child
- Unhygienic conditions
- Improper diet

B. Aiding Child's Development/Growth

1. Lead a discussion on how to assist a child to develop and remain healthy.
2. Encourage participants to contribute.
3. Note points and fill in missing points as:
 - Full breastfeeding for the first 6 months after birth
 - Breastfeeding baby for up till 24 months
 - Taking the child to the health centre for regular check-ups
 - Gradual complementary feeding of the child and introducing adequate diet
 - Nursing child in a clean environment.
 - Delaying next pregnancy until the child is 30 to 36 months old
 - Ensuring the child starts immunisation on time and completes it
 - Using the "road to health" chart to monitor the child's growth
 - Ensuring that the counsell provided by the health worker is adhere to by the mother of the child
4. Stress the importance of this session as it will go a long way in reducing the infant mortality rate in the country. Furthermore, emphasise that the development or growth of a child can be monitored by using the weight, age and height of the child. This is shown in popular road to health chart at the back of the immunisation cards of the child.

C. Growth Monitoring

1. Ask participants to brainstorm on how to monitor the growth of a child using the growth chart
2. Ask one of the participants to volunteer to demonstrate to the class how the chart is used, and allow the others to comment on the process.

3. Thank the participant for demonstrating to the class, and then carefully take the class through the process of using the growth chart, stressing that

The best way to check whether a child is healthy and is getting enough nutritious food is to weigh the child each month and check if the child gains weight normally. If a record of the child's weight is kept monthly on the growth monitoring chart, it is easy to see if the child is gaining weight normally.

D. Requirements for Growth Monitoring

Describe the items required for growth monitoring as: Items required are as follows:

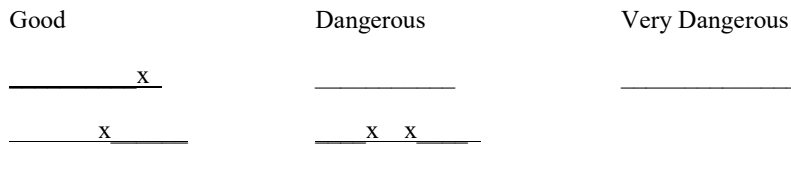
- i. Three types of scale are available for this:
 - a. Hanging scale
 - b. Table scale and
 - c. Adult scale, often referred to as bathroom scale
- ii. Tape measure
- iii. Graduated rod (centimeters) or a flat ground with a wall that has been graduated
- iv. Growth monitoring card
- v. Pencil

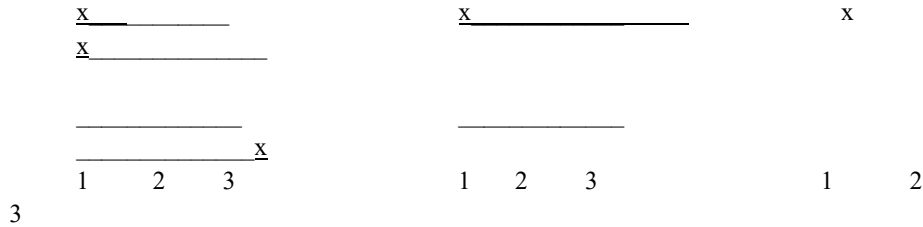
Other ways of measuring child growth are:

- Measuring Mid upper arm circumference
- Measuring the head circumference

I Growth Patterns

1. Display actual growth chart with examples of good, dangerous and very dangerous curves.
2. Explain why the patterns are either good or bad.





x = monthly weight of a child at each visit

Good = the weight increases steadily

Dangerous = the weight increases until the 2nd month and then remains static instead of increasing

Very dangerous = child's weight remains static between the 1st and 2nd months and then drops in the 3rd month.

3. At each visit when the child's weight is taken and recorded, health providers must explain to mothers the growth situation/ pattern of their children. Mothers whose children are growing well, should be praised and encouraged to feed the child with nutritious meals, and those whose children are not doing well, should be questioned to know what is wrong with the feeding habits of the child, and adequate counsel provided to the mother on the child's health.

J. Types of Food that Aid Child's Growth

1. Review types/groups of food that can make up a balanced diet and aid a child's growth.
2. Give examples from each group.
3. Ask volunteers to arrange food to make a balanced meal (using model or pictures of types of food).
4. Relate how a balanced meal will enhance child's growth by highlighting types and functions of food as:
 - Body building (protein)
 - Energy producing (carbohydrate & fat)

- Protective & body improving (vitamins and minerals).

K. Uses of Growth Chart

1. End the session by explaining the uses of a growth chart as:

i. To record:

- Birth of a child
- Name of child
- Age 0 – 5 years

ii. To monitor:

- Weight
- Immunisation
- Illness
- Stages of development
- Assessment of growth and nutritional status of the child
- Under-nutrition prevention tool

2. Encourage questions and respond

Summarize the session and ask a participant to volunteer to lead a singsong

REVIEW/EVALUATION

1. What is child growth?
2. What are the signs of a healthy growing child?
3. Explain the reasons for retarded growth.
4. Describe how to aid child's growth.
5. Describe what growth monitoring is.
6. What are the uses of a growth monitoring chart?

TOPIC: FEVER AND CONVULSION

DURATION: 40 mins

Learning Objectives

The participants will be able to:

1. Define fever and convulsion.
2. Identify signs and symptoms of fever and convulsion.

Training Materials

- ✓ Flip sheet stand
- ✓ Flip sheets
- ✓ Markers
- ✓ Pictorials

A. Introduction

1. Introduce the session by requesting the participants to comment on their understanding of the term fever and respond accordingly.
2. Note their responses, correct misconceptions and clarify as follows...

Fever and convulsion are common ailments in babies. If not treated promptly, it could result in the death of the baby. Fever is a common symptom of other diseases or ill health in the body. It is characterized by pyrexia i.e. high temperature. The body is hot. There may be shivering and the patient feels unwell.

Convulsion is usually the result of continuous fever in which the brain is touched (irritated) by the high temperature. The body reacts by upward rolling of the eyes, stiffening of the jaw and muscles, clenching of the teeth and jerky movements etc.

B. Signs and Symptoms of Fever & Convulsion

1. Request the participants to say what they know about the signs and symptoms of fever and convulsion.
2. Note their responses, correct misconceptions and myths, and expand on points as:
 - High temperature
 - Loss of appetite
 - Restlessness

- Rapid pulse and respiration
- Loss of consciousness
- Twitching of the eyes
- Jerky movements
- Rigidity (stiffness)

Explain to participants that convulsion is a complication of fever and not a myth as believed by some. It is important to ensure that fever is managed promptly to prevent complication. Fever is a common sign of Malaria, especially when it comes on the child at night, although the child plays during the day.

C. Management of Fever and Convulsion

1. Request participants to brainstorm on the management of fever.
 2. Commend participants, note their contributions and fill in missing information as:
 - Bathe patient with cold water or fan to reduce the temperature
 - Put light clothes on the patient
 - Make sure the patient rests
 - Give paracetamol as follows:
 - Under 5yrs: 1/2 tab, 3ce a day for 3 days;
 - Under 1 yr: ¼ tab, 3ce a day for 3 days or if available give paracetamol syrup
 - Watch the patient very closely and, if there appears to be no improvement, take the child to the nearest health center.
 3. Ask participants to brainstorm on the management of convulsion.
 4. Note their contributions on the flipchart.
 5. Lead discussion on relevant contributions and thereafter supply the information as:
 - Insert padded spoon in the mouth of the patient to prevent biting of tongue/tongue choking the baby.
 - Ensure that the air passages are clear
 - To prevent the bones from being broken, do not restrict patient.
- N.B.** When there seems to be no improvement in the patient's condition, refer the patient immediately to an appropriate health unit.
6. Emphasise the “don'ts” of managing convulsion as:

- Do not give cow's urine
- Do not rub pepper in the child's eyes
- Do not burn child's feet, hands and lips

These are dangerous and could cause complications.

Summary

Summarize and end the session by explaining that there are several reasons why a child can develop fever, it could as a result of an infection, or as a sign that the child was coming down with malaria.

REVIEW/EVALUATION

1. Define (a) fever (b) convulsion
2. How will you manage cases of fever and convulsion?

TOPIC: DIARRHOEA

Duration: 1 hour

Learning Objectives

At the end of this session the participants will be able to:

1. Describe when a child has diarrhoea
2. State the common causes of diarrhoea and how it is spread
3. Describe the signs and symptoms of diarrhoea
4. Explain how diarrhoea can be prevented
5. State the signs and symptoms of complications of diarrhoea
6. List the signs of dehydration
7. Describe how to assess and prevent dehydration
8. Demonstrate the preparation of Oral Rehydration Solution (ORS)

Training Materials

- ✓ Flip sheet stand
- ✓ Flip sheets
- ✓ Markers
- ✓ Salt, Sugar, Clean water
- ✓ Measuring bottles
- ✓ Pre-packed ORS
- ✓ Coconut
- ✓ Pictorials

A. Introduction

1. Ask participants to brainstorm on the meaning of diarrhoea or what mothers consider as diarrhoea in children
2. Jot points on the flipchart and add to the definition as:

Diarrhoea is the frequent passing of watery or very loose stool which occurs more often than normal for a particular person. It is more common and more dangerous in young children especially those that are malnourished.

3. Ask the participants to give the local name or slang for diarrhea
4. Note responses

B. Causes of Diarrhoea

1. Guide discussion on what participants' associate diarrhea with
2. Note responses, clarify as necessary and correct misconceptions
3. Explain the causes of diarrhoea as:

Diarrhoea is caused by germs which usually enter the body in various ways e.g.

1. Through unhygienic conditions such as:

- i Using pots, pans, cups etc. without cleaning after each use
- ii. Drinking dirt and unboiled water
- iii. Handling food with dirty hands
- iv Poor disposal of faeces
- v Eating uncovered food that has been contaminated by flies

2. Improper Complementary feeding

- i Early complementary feeding of baby
- ii. Bottle feeding
- iii. Poorly cooked or poorly prepared food.
- iv Under feeding or over feeding

3. Diseases causing Diarrhoea

- I Malaria
- ii. Measles
- iii. Urinary Infection
- iv Infection of the stomach and intestine
- v Severe malnutrition

C. How Diarrhoea is Spread?

Guide discussion on how diarrhoea can be spread. Note points and add as:

- Using dirty pots to prepare food
- Using dirty feeding bottles
- Eating with dirty hands
- Eating unwashed fruits or vegetables
- Not washing one's hands after attending to a child with diarrhoea

D Signs and Symptoms

1. Ask participants to brainstorm on the signs and symptoms of diarrhoea
2. Note points and fill in the missing ones as:
 - Frequent watery stool with or without vomiting
 - General weakness
 - Loss of appetite
 - Abdominal pains
3. Tell the participants that if the signs of diarrhoea are not noticed and treated promptly, complications may arise.

D. Prevention of Diarrhoea

1. Ask participants to brainstorm on what people in the community do to avoid getting diarrhoea
2. Jot points on the flipchart
3. Describe how to prevent diarrhoea under the following headings such as:
 - a. Personal and environmental cleanliness
 - b. Good nutrition
 - c. Proper complementary feeding
 - d. Preventing food poisoning

Personal and environmental cleanliness

- General cleanliness of the home, environment and cooking utensils.
- Cleanliness in eating and drinking
- Covering food and water
- Boiling water for drinking
- Burning or burying all garbage away from water source
- Building latrines or toilets and covering them with lids when not in use

Good nutrition

Eat balanced diet

Proper complementary feeding

- Introduce complementary feeding diet at the right age and gradually
- Prepare baby's food properly

Preventing food poisoning

- Cook food thoroughly
- Wash all fruits well before eating
- Store food properly

E. Complications of Diarrhoea

1. Ask participants to brainstorm on complications of diarrhoea
2. Note points on the flipchart and fill in missing points as:
 - Dehydration
 - Malnutrition
 - Convulsion
 - Loss of appetite
 - Death if not treated

F. Dehydration

1. Introduce the topic of dehydration as a result of diarrhoea as:

Dehydration from diarrhoea can kill if not treated on time. Most children or people who die from diarrhoea do so because the body loses a lot of fluid.

Signs of mild and moderate dehydration

1. Tell participants that it is important for them to know the signs that the body is losing fluid and salt (dehydration) and that such a victim is in danger.
2. Ask participants to brainstorm on the signs of dehydration
3. Note responses, clarify and fill in missing points as:
 - Passing stool 3-10 times per day
 - Dark, little or no urine
 - Some vomiting
 - Sudden weight loss
 - Feeling thirsty and mouth is dry
 - Sunken eyes
 - Sagging of the soft part of infant's head

- Breathing and pulse are faster than normal
- When the skin is pinched it goes back slowly

Signs of severe dehydration

- Passing liquid stool more than 10 times per day
- Eyes and fontanelle are sunken
- Breathing may be fast
- Child is restless
- Fever
- Mouth and tongue are very dry
- Fits (convulsion)

G. How to Assess Dehydration in a Child

1. Describe and demonstrate how to assess dehydration in a child as:
 - Check the soft area on top of baby's head for sagging
 - Check mouth for dryness
 - Check for sunken eyes
 - Check breathing, see if it is fast or smelling
 - Check skin fold for loss of elasticity
2. Encourage participants to ask questions
3. Respond to questions.

H. Prevention of Dehydration

1. Ask participants to brainstorm on how to prevent dehydration
2. Note points
3. Clarify and fill in missing points as:
 - Diarrhoea can be prevented through health education.
 - Recognize early and treat diarrhoea and vomiting early
 - Continue to breastfeed during diarrhoea (if a child).
 - Replace body fluids and salt with plenty of fluids
 - Use Oral Rehydration Solution (ORS)

- Do not allow dehydration to set in when a child or any other person has diarrhoea.

J How to make Oral Rehydration Solution (ORS)

1. Display posters on the steps to be taken in mixing ORS.

You will need: clean water, empty clean bowl, empty clean bottle of EVA water, cube or granulated sugar, salt, teaspoon, bowl with water for washing hands, soap, and hand towel.

Step 1: Have all items for the solution on a clean table.

Step 2: Wash your hands with soap and water. Rinse soap off.

Step 3: Measure 1 litre of boiled or clean drinking water into a clean bowl. Use a clean EVA bottle as a water measure

Step 4: Measure 1 level teaspoon of salt and 10 level teaspoons of sugar or 5 cubes of sugar. Pour into the bowl of water.

Step 5: Stir the mixture until the sugar and salt dissolve.

Step 6: Taste the solution which should taste like tear drops or coconut water.

2. Start singing the ORS songs while explaining and demonstrating the mixing of ORS step by step.

Song: Give him salvation water for the good health of your baby.

10 level teaspoon of sugar

1 level teaspoon of salt

1 bottle of EVA bottle of water measures, mix all together

Give the child a little at a time, Give him salvation.

3. Ask each participant to bring out his/her cup.
4. Put the prepared ORS in each participant's cup to taste.
5. Ask participants to comment on the taste and respond.
6. Divide participants into groups of 6 to practice the mixing ORS.
7. Call back group after 10 minutes to sing a song on ORS.
8. Ask one or two participants to return demonstration, commend and clarify.

K Administering Oral Rehydration Therapy (ORT)

1. Explain how to administer the ORS to a child or adult with diarrhoea as:
 - Fill a small cup with the solution
 - Using a teaspoon, give the child as much solution as he/she can take
 - Do not worry if the child vomits, just wait a few minutes and give some more because some of the solution will be absorbed
 - Give a cupful after each watery stool
 - Keep on breastfeeding and feeding with other food as well

An average one year old child should be rehydrated after receiving one bottle of EVA full of ORS slowly over 6 – 12 hours. A fresh solution should be made every day, mothers should avoid giving their children left over ORT solutions.

Adults may drink freely as required. Two cups or more for each watery stool is recommended.

2. To ensure better understanding of the instructions, compose a song on how much ORS to give e.g.

“One stool “Pooh” cup of ORS “Hum”

3. Repeat this song with participants

L. Points to Remember

1. Guide discussion on important points to remember about:
 - a. ORS fluid
 - b. Feeding during diarrhoea
 - c. When to seek medical help
2. Expand on points as:
 - Other fluids can be used if ORS salt and sugar are not available e.g. tea, coconut, juice, plain water, or pap

- Remember to pour away the prepared Oral Rehydration Solution (ORS) after 24 hours if not used and make a fresh solution
 - Mother should continue to breastfeed the baby during diarrhoea
 - A cup and spoon should be used for feeding the baby; bottle feeding should be discouraged
 - Oral Rehydration Solution (ORS) does not stop diarrhoea but saves the victim from dehydration
3. Emphasise the importance of seeking medical help promptly before it is too late if client is not responding to treatment

Seek Medical Help

- If the child vomits everything he or she drinks or refuses to drink.
- If the child begins to have fits or if the feet and face swell.
- If the person is weak or malnourished.
- If there is blood in the stool
- Remember, if there is no improvement after 24 hours, continue the ORS and refer the person to the nearest health centre without delay.

End the session with a song on the prevention of diarrhoea

REVIEW/EVALUATION

1. What is diarrhoea?
2. State 3 causes of diarrhoea?
3. What signs and symptoms would a dehydrated client present?
4. Demonstrate how to prepare ORS.
5. State 6 points to remember when managing a person or baby with diarrhoea

TOPIC: WATER, SANITATION AND HYGIENE (WASH)

DURATION: 1 HOUR

Learning Objectives

The participants will be able to:

1. Explain the relationship between water, sanitation and hygiene
2. List five diseases caused by poor sanitation, hygiene and drinking bad water.
3. State 3 ways by which water can be purified for household consumption

Training Materials

- ✓ Flip sheet stand
- ✓ Flip sheets
- ✓ Markers
- ✓ Alum, Water Guard
- ✓ Mosquito Net
- ✓ Pictorials

A. Introduction

1. Introduce the session by stating that there are conditions that are necessary for healthy living, and such conditions include living in a clean environment, ensuring the consumption of clean water and bathing regularly.
2. Stress that even if one is rich, and these conditions are not ensured, the individual is bound to fall ill, because the environment is full of germs.
3. Germs are very tiny organisms that cannot be seen with naked eyes that cause infections that if not treated can lead to death.

B. What is Sanitation and Hygiene?

1. Request a volunteer from the participants to explain the term “Sanitation”
2. Ask the other participants if they agree with the explanation
3. Clarify with a song... *emo toto ni segun arun gbogbo* (cleanliness is the conqueror of all diseases), ask the participants to sing along with you.
4. **Sanitation** is the act of making sure that the places where we live, work, cook, bath & sleep and the surrounding areas are clean from dirt and other items that may breed germs.

Hygiene is the extent to which people keep themselves or their surroundings clean, especially to prevent diseases.

C. The importance of Water to human existence

1. Ask the participants to each write 10 importance of water to human existence, and let a volunteer read out from her list.
2. Stress that water is important in ensuring sanitation and hygiene. Clean water supplies are essential for good health and cleanliness in the home. Several diseases are spread by polluted water. These diseases include diarrhoea, typhoid, cholera, schistosomiasis, gastrointestinal infections.
3. Families that use water from uncovered ponds or wells are likely to suffer from some of the diseases mentioned.

D. Purification of water within the household

1. Ask participants identify means of purification of water in the household
2. Responses may include following
 - Boiling
 - Use of Alum
 - Filtration
3. Thank them for their responses and explain further that the answers are correct, include to the list the act of placing water direct under sunlight, overnight storage of water in earthenware vessels and the use of water purifiers i.e Water Guard or PUP(*these could be very expensive and out of reach of some community members*)
4. Stress that any water to be given to infants should first be boiled and allowed to cool before giving to child and never left uncovered.

E. Consequences of dirty Environment

1. Ask participants to brainstorm on the consequences of a dirty environment
2. Stress that dirt and unkempt environment provides the ideal conditions for Mosquitoes which transmit Malaria to live and breed.
3. Ask the participants if there were other causes of malaria that they know.
4. Correct the misconceptions about the causes of malaria, stating that Malaria is caused by the *female Anopheles Mosquito*. Clearing bushes, cleaning gutters and water alleys will

reduce the breeding rates of mosquitoes. Show the participants a mosquito net, and ask a volunteer to hang the net.

5. Mosquitoes net are distrusted by the National Malaria Programme (NMP) to rural areas, to be given to pregnant women and children under-five years, because Malaria can easily cause death in to pregnant women and children below five years

6. Also NMP, provides malaria drugs to be given free of charge in the PHCs

F. Summary

Summarize the session by reminding the participants the important of hygiene both personal, household and environment. Conclude by singing the song on sanitation again.

Review/Evaluation

1. Explain the relationship between water, sanitation and hygiene
2. List five diseases caused by poor sanitation, hygiene and drinking bad water.
3. State 3 ways by which water can be purified for household consumption

TOPIC: INTRODUCTION TO FAMILY PLANNING

DUARTION: 1 hour

Learning Objectives

The participants will be able to:

1. Define Family Planning
2. Explain the relevance of Family Planning to maternal and Child health
3. Explain the relationship between population growth and family planning
4. State 4 misconceptions about Family Planning
5. Explain why knowledge about Family Planning is important to individuals
6. State at least 6 functions of VPEs in providing family planning services

Training Materials

- ✓ Flip sheet stand
- ✓ Flip sheets
- ✓ Markers
- ✓ Pictorials

A. Introduction

1. Display the session's objectives and read each objective out to participants
2. Ask participants to repeat each objective after you and to comment.
3. Respond to comments

B. Definition of and Introduction to Family Planning

1. Start session with any relevant song on the survival of mother and baby.
2. Introduce the specific objective.
3. Have a group of 10 participants as Group A and group of 6 participants as Group B. Cut an orange into 10 for Group A to share. Cut a 2nd orange into 6 for Group B to share.
4. Ask the other participants to comment on the satisfaction of sharing. Note comments.
5. Ask participants to brainstorm on the definition of family planning.

6. Note points on the flipchart and guide discussion on definition and expand as:

A family is a group made up of parents and children, including extended relatives.

Planning is deciding or preparing for the future

Family planning is the decision taken by individuals or couples on when to get pregnant, the number of children to have, and the intervals at which to have them in order to be able to cater for the family's needs. Family planning also assists infertile couples to be investigated and treated. Stress at this point that VPEs should be very careful in explaining to mothers and their husbands the meaning of FP, as many assume that family planning is targeted at making people not have children.

7. Ask the participants if the orange exercise has any bearing on the definition.
8. Note responses and summarize as per definition.

C. Relevance of Family Planning to Maternal and Child Health

1. Introduce the topic as:

High risk pregnancies are those occurring before age 18 or after age 35, after 4 births and at intervals of less than 2 years. Women who have unplanned pregnancies sometimes have illegal abortions and risk dying.

2. Ask participants to brainstorm on the major preventable causes of maternal death.

3. Note responses and fill in missing points as:

Responses may include

- hemorrhage
- obstructed labour
- infection
- eclampsia
- anaemia
- abortion

4. Guide the discussion on the role of family planning in ensuring the good health of the mother and preventing maternal death. Note responses and fill in the missing information as:

The role of family planning in the reduction of maternal death is the ability to:

- Reduce the number of pregnancies; and prevent those that want to get pregnant at an early age, at short intervals, at an old age or have too many children from getting pregnant.

D. Population and Family Planning

1. Introduce the topic on population policy as:

Nigeria is the 8th most populous country in the world. Its population has continued to grow at a fast rate. At present, the average fertility rate of Nigerian women is about 6 children per woman. The effects of this have been described in the Nigerian national population policy as affecting health, education, agriculture, land resources, domestic product, energy resources, environment and employment.

1. Guide discussion on the issue of population growth, the present situation with regard to living standards in the country and its effect on employment, salaries, feeding, trade, transportation, health, education, economy and development.
2. Note points on the flip sheet and contribute.
3. Stress the point that it is never too late to find a solution to the problem of rapid population growth if we can all work together to find a solution to the issue of overpopulation.

E. Misconceptions about Family Planning

1. Introduce the session as:

Different people have different ideas about the concept of family planning. The negative concepts have prevented some people from accepting family planning. Rumours and misconceptions can retard progress and may cause death.

2. Guide a discussion on the misconceptions, rumours and beliefs that participants have heard about family planning, both positive and negative.
3. Jot responses on flipsheet. Expand on points and explain that these misconceptions are usually heard when being discussed by people.

Responses may include:

- Family planning is foreign and it is not a part of our culture
- It is an attempt by the developed countries to keep our population low so that they can wage wars against us and win.

- It is a sin, because as God says “Go forth and multiply”
- It promotes promiscuity.
- It is an attempt to destroy the 3rd world countries

Word of Mouth Story Game

4. Illustrate with a word game how people distort information and spread incorrect information. Call 2 of the participants to a corner and give them some information. Ask one of them to hold on to the written information. Ask the 2nd participant to whisper the information to the next person and so on until all 10 or 12 people have heard the information.
5. Request each of the ten who heard the story to repeat loudly what was said. Ask the last two who were provided with the information to repeat what they heard. Then ask the participant who passed the information, and the second who has the written information to read it out.

My brother’s wife went to a VPE to complain about the foaming tablet. She thought it was making her lose weight. The VPE asked if she had been using the foaming tablets as instructed. She answered ‘Yes’. She however complained that with the marketing of her farm product she had not been able to meet the deadline for refunding the loan she got from the cooperative. The VPE reminded her to collect more foaming tablets and encouraged her to intensify her marketing.

6. Ask participants to discuss why rumours start, for what reasons and their effects either positive or negative. Note responses.
7. Ask why the information given initially changed and for what reasons. Note responses on the flipchart.
8. Ask if the game has illustrated how information gets distorted, how rumours spread and why people have misconceptions about various things.

F. Explanation of Misinformation and Misconceptions about Family Planning

9. Correct misinformation about family planning as:
 - i. Family planning is foreign.
Exp: Family planning is as old as mankind. Traditional methods introduced by our forefathers clearly prove this misconception wrong.
 - ii. Family planning promotes promiscuity.

Exp.: Each individual has his/her goals and values. Family planning has nothing to do with promiscuity.

iii. Family planning is a sin.

Exp: It is more sinful to neglect one's responsibility to one's family.

10. Guide discussion on each point.

11. Note comments and contribute.

G. Importance of Learning about Family Planning

1. Ask participants to brainstorm on why it is important to acquire more knowledge about family planning.

2. Note responses on flip sheets. Expand as:

Knowledge is golden. Therefore knowledge about family planning is essential:

I. will ensure that one is not ignorant of important issues

ii. Allows for development

iii. Allows for better understanding of the truth. Knowledge of family planning assists an individual to decide voluntarily and choose the method of family planning he/she wishes to use at the time it is wanted. This enables individuals to derive the benefits of family planning.

iv. Helps to prevent maternal death due to too many pregnancies and pregnancy too early, too late and at short intervals.

V. Helps to prevent infant death

H. Role of VPEs in Providing Family Planning Services

1. Introduce the session by asking participants to brainstorm on their functions as family planning service providers

2. Record responses on the flipchart, clarify and expand on responses as:

The role of VPEs within the community in reducing maternal and infant deaths is very important. It is therefore necessary that each VPEs is familiar with her tasks and knows her limitations in order to prevent complications.

Functions/tasks of VPEs

- a. Toknow about population and family planning issues
 - b. Educate and counsel communities on family planning
 - c. Identify target groups and counsel them on family planning
 - d. Refer clients needing prescriptive methods
 - e. Mobilise the communities to support and participate in programmes
- 3 Ask participants to repeat each function after you
 - 4 Explain each function until it is understood by VPEs
 - 5 Encourage questions and provide answers

REVIEW/EVALUATION

1. What is family planning?
2. How is family planning relevant to a mother's health?
3. What are some of the negative misconceptions about FP?

TOPIC: COMMUNICATION

DURATION: 1 hour

Learning Objectives

The participants will be able to:

1. Explain what communication means
2. State the two types of communication
3. Explain the basic principles of effective communication
4. State 3 reasons for good communication
5. State 5 reasons why communication skills are important
6. Explain the importance of feedback

Training Materials

- ✓ Flip Sheets
- ✓ Flip Stands
- ✓ Makers
- ✓ Pictorials

A. Introduction

1. Introduce the topic and read out the objectives
2. Request participants to repeat after you
3. Discuss and explain each objective to participants
4. Allow participants to reason out the session's topic by asking them to explain what a participant is trying to do when she is telling a client the benefits of using a ORS in the treatment of diarrhoea for a child
5. Note responses
Responses may include:
 - Talking
 - Teaching
 - Preaching

B. Definition

1. Explain in simple terms the definition of communication as:

Communication is defined as the act of passing information from one person to another or from one group of people to another.

C. Ways of Communicating

1. Ask participants to brainstorm on the various ways of communicating and give examples of each.
2. Write the non-verbal acts on plain paper or cards, ask each participant to pick a card, demonstrate the act written on the card, and then ask the other participants what the demonstration denotes.
3. Note responses and clarify as necessary.

There are two ways of communication:

- a. Verbal
- b. Non-verbal.

Verbal includes:

Talking
Singing
Whistling

Non-verbal includes:

- Eye contact
- Body movement
- Facial expressions
- Foot or toe tapping
- Drumming
- Touch
- Writing notes or letters

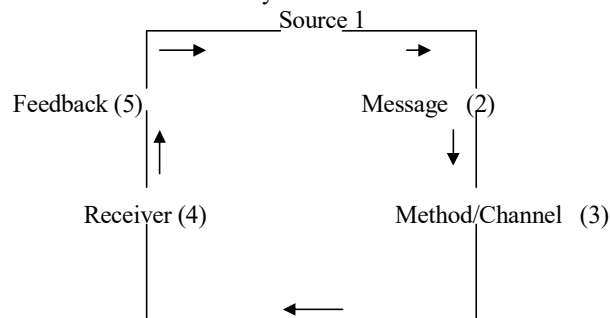
D. Model of Communication

1. Display the diagram of the 5 elements of communication as:

The 5 elements involved in communication are:

- Sender/speaker
- Method
- Message
- Receiver
- Feedback

2. Explain the 5 elements necessary in communication. Illustrate with the diagram.



The sender creates and passes the information or message.

The receiver is the person (or group) who receives or responds to the message.

The message contains both the sender's information and receiver's interpretation of the message.

The feedback is the way the receiver of the message lets the sender know the information is clearly understood.

3. Explain further by giving an example with a short dialogue between Ani and Tafe as:

Example of model of communication

Dialogue between Iya Funmi and Iya Kudi at the Village Market...

Iya Funmi: I will never go to the health center to collect immunisation for my son again. The last immunisation he collected he developed a fever afterward.

Iya Kudi: I agree with you to stay home. I have never collected any of their so called immunisation for Kudi, and she has never fallen ill.

Iya Funmi is the sender. Iya Kudi is the receiver. The message is the information passed. The feedback is the response given by Iya Kudi.

3. Ask the participants the following:

- Who is the sender?
- Who is the receiver?
- What is the message?
- What is the feedback?

4. Note responses and clarify

Explain that the feedback one receives when information is given is very important as it allows the sender to be sure that the receiver correctly understood the message.

E. Principles of Effective Communication

1. Explain the basic principles of effective communication to the participants as:

- I Provide a comfortable setting with little or no distraction
- ii. Stick to clients' needs or interests.
- iii. Use simple words that clients will understand.
- iv. Use audible words that clients will understand.
- v Use two ways of communicating, i.e. be a good speaker and a good listener.
- vi Do not give too much information.

- vii Always be brief
 - viii Always get a feedback
2. Guide discussion on each point to ensure better understanding of the basic principles of effective communication

F. Demonstration: Role Playing

1. Ask 4 volunteers to act out two role-plays.
 - a. One pair should act out bad communication
 - b. The second pair should act out good communication (use same setting but reverse for good communication)
2. Ask other participants to observe how information is exchanged between the two volunteers (one acting as client and the other as VPE) as well as how the setting helps to ensure or prevent effective communication.

Behaviour of a Bad Health Worker

- Starts to talk without creating a conducive environment.
- Gives a lot of information without finding out the client's needs or interests
- Uses difficult words without explanation
- Talks fast and does not allow the client to ask questions

Behaviour of a Good Health Worker

- Greet the family
 - Invite the client to a quiet room or space
 - Give only a little information at a time and get feedback
 - Use easy words and explain
 - Talk slowly and allow clients to ask questions
 - Respond accordingly.
3. Write responses on the flipchart under the following headings:
 - Setting
 - Understanding of words
 - How client feels
 - Audible voice or inaudible voice
 - Too little or too much information
 - Feedback or not
 4. Ask the volunteer who acted as the client in the bad communication role-play how he or she felt and the one who acted in the good communication role-play how he or she felt. Note comments.

5. Guide discussion on good and bad communication.

6. Note contributions and clarify.

G. Importance of Good Communication Skills

1. Ask participants to brainstorm on the importance of good communication skills.

2. Note responses on the flipchart and expand on points as:

i. Enables individuals to feel better about themselves

ii. Enables individuals to get along better with others

iii. Prevents misinterpretation of information

iv. Prevents breakdown in communication

v. Helps to strengthen personal, group and community relationship.

3. Emphasise the importance of the participants acquiring good communication skills as this is essential in enabling them to function effectively.

REVIEW/EVALUATION

1. What do you understand by the term 'communication'?

2. State 5 principles of effective communication.

3. State 2 important aspects of good communication.

4. State 3 reasons for good communication skills

5. Why is feedback important?

TOPIC:COUNSELLING

DURATION: 1 HOUR

Learning Objectives

The participants will be able to:

1. Explain the term 'counselling'
2. Differentiate between motivation and counselling
3. State the importance of counselling
4. State and explain the three types of counselling
5. Explain the qualities and skills expected of a good counselor
6. State 4 reasons why referral is important

Training Materials

- ✓ Flip sheet stand
- ✓ Flip sheets
- ✓ Markers
- ✓ Pictorials

A. Introduction

1. Display the objectives

2. Explain the term 'counselling' as:

Counselling is the process of communication/interaction between two or more people in which one person assists the other (or others) to make a decision based on accurate information in order to effect a change in behaviour.

B. Difference between Counselling and Motivation

1. Ask volunteer to differentiate between motivation and counselling. Note responses and clarify as:

Motivation is the process of influencing an individual or group to take an action while counselling involves assisting someone to take a voluntary decision based on facts and accurate information

C. Importance of Counselling

1. Guide a discussion on the importance of counselling
2. Jot responses on flipchart
3. Expand on the responses as:

- It allows a client to be better informed about an issue.
- It enables an individual to take a voluntary decision without being forced
- It allows better interaction between service providers and clients
- It allows clients to ask questions and receive answers that will correct misconceptions, rumours and myths.
- It enables client to be assisted by a counselor, to understand his/her needs and feelings about a situation, and to plan for the future.

D. Types of Counselling

1.Explain that there are three types of counselling. State and describe each type for better understanding and explain when each type can be used during the course of participants work as:

- Individual counselling (one to one basis) can be used at any time
- Group counselling can be used at a meeting or gathering.
- Family counselling can be done at client’s home

E. Steps in Counselling

1.Guide discussion on the steps in counselling using the acronym “GATHER” as:

The acronym can be used to guide the steps in counselling:

- | | | |
|---|---|--|
| G | - | Greet client warmly |
| A | - | Ask client about him/herself |
| T | - | Tell client about available services |
| H | - | Help the client to decide the services required |
| E | - | Explain how to make use of the services |
| R | - | Return for follow-up, or plan referral and repeat visit. |

Note: The letters GATHER may not be appropriate for non-literates but it could be adapted to guide discussion and teaching of participants on counselling steps.

1. Explain each step in a simple way to ensure better understanding of how to counsel clients especially for family planning methods.
2. Ask participants to repeat each step after you, using their own words.

Explanation on GATHER

G Greet the client: It is important that this is done politely and warmly. A comfortable place where privacy is assured should be used for counselling.

- A Ask the client for the type of assistance you can offer before taking history.
- T Tell the client about services available including family planning methods, treatment of common ailments and referral. Detailed information must be provided.
- H Help the client decide on the type of services required and avoid influencing the client, especially when choosing family planning methods.
- E Explain to the client how to make use of household child survival interventions or how to use drugs, ensuring that all information including instructions are provided fully and correctly.
- R Return for follow-up or plan referral or repeat visit.

F. Skills Needed

1. Ask participants to brainstorm on the skills needed for effective interpersonal communication in Counselling
2. Note responses, clarify and expand as:
 - Ability to:
 - Use verbal and non-verbal communication
 - Praise and encourage
 - Clarify values
 - Observe
 - Assist in decision making
 - Explain in language clients understand
3. The acronym ROLES & CLEAR are also necessary skills needed by participants

Ability to:-

- R** Relax
- O** Open up
- L** Lean forward
- E** Establish eye contact
- S** Sit squarely and smile

Ability to:-

- C** Clarify
- L** Listen
- E** Encourage
- A** Acknowledge
- R** Repeat or reflect

G. Qualities of a Good Counselor

1. Explain that for a participant to be a good counselor, he/she must possess or develop some qualities.
2. Ask participants to brainstorm on the qualities of a good counselor.
3. Note points and fill in missing ones and explain each quality as:
 - i Must be friendly and warm
 - ii Must be able to develop friendship with a person
 - iii Must be knowledgeable about Reproductive Health Promoters' role and limitations e.g. on family planning, including advantages, disadvantages etc.
 - iv Must be trusted and be able to ensure confidentiality.
 - v Must be a good listener and must respect other people's views
 - vi Must be able to treat people with dignity
 - vii Must not force views or values on people
 - viii Must not be judgemental
 - ix Must be observant
 - x Must be able to communicate clearly
 - xi Must not ask embarrassing questions
4. Encourage questions and respond to the satisfaction of the person asking the question.

H Demonstration/Role Play

1. Divide the participants into groups of three using the case studies in the content for counselling.
2. One person acts as a counselor, another as a counselee and one as observer. These roles will be rotated in turns until all participants will have had the opportunity to practice. The observer watches the counselling process to make sure all the steps in the

“GATHER” acronym are used in the counselling process as well as the skills already mentioned.

3. After each participant has practiced as a counselor, the participants should return to the large group for discussion, answering the following questions.
 - What went well for you?
 - What did you find difficult?
 - What needed improvement?
4. Demonstrate through role playing the steps with another facilitator.

Case Studies

(a) Mrs. Jaja is a mother of 6 children – all girls. Her husband wants a girl by all means. She has been advised against having another child for health reasons. The husband is putting pressure on her to have another child who he is convinced will be a boy. How will you counsel her and her husband?

(b) A couple with 3 children come to the clinic for advice as 2 of their children have polio. The last child is still only 3 months old. They claim not to know much about immunisation. How would you help them?

(c) Mrs. Gogo and her husband come to your house having heard of family planning from their neighbor. They want a method. How would you counsel them to make a choice?

5. Commend and comment
6. Summarize the session, encourage participants by saying that they will improve with more practice and that no two individuals are the same.
7. Emphasise that information about clients should always be kept confidential.

REVIEW/EVALUATION

1. What does the term ‘counselling’ mean?
2. Differentiate between motivation and counselling
3. Why is counselling important when providing family planning services?
4. State the three types of counselling and explain each type.
5. Explain the steps involved in counselling using the acronym “GATHER”.
6. What do you understand by the acronyms “ROLES” and “CLEAR”.
7. Demonstrate understanding of how to conduct counselling using case-studies.

TOPIC: REFERRAL

DURATION: 1 hour

Learning Objectives

The participants will be able to:

1. Explain what Referral means
2. State 4 importance of referral
3. Mention 3 conditions when you to refer a client to the clinic

Training materials

- ✓ Flip sheet stand
- ✓ Flip sheets
- ✓ Markers
- ✓ Pictorials

A. Definition of Referral

1. Ask participants to define referral
2. Note responses
3. Explain in a simpler form the definition of referral as:

Referral is sending a client or patient to an expert or telling people where to go for health assistance beyond the scope of the health worker or that can be handled at home.

B. Two-way Referral System

1. Explain that for the referral system to work there must be a 2-way referral system in place.
2. Explain the 2-way referral system to the participants

A two-way referral system is sending a client or patient for higher level care and then having this same person **sent back** from the source of higher level care to the sender after care has been provided

3. Jot points on the flipchart
4. Explain further with the pictograph on tally sheet illustrating the client going in and out of the health post.

A. Indications for Referral

1. Guide discussion on the indications for referral for the following services:
 - Ante-natal
 - Delivery
 - Post-natal care
 - Care of new born
 - Family planning
 - Common ailments
2. Note responses and clarify.
3. Expand on each point as:

Indications for Referral

- i Ante-natal care**
 - High risk women
 - Complications in pregnancy
 - For Tetanus Toxoid Vaccine
- ii. Delivery**
 - Complications during delivery, e.g. prolonged labour, haemorrhage, retained placenta
- iii. Post natal care**
 - Post-natal check up
- iv Care of new born**
 - Immunisation
 - Problems with newborn
- v Family planning**
 - Blood pressure check for clients on pills
 - Clients with problems following contraceptive usage
 - More effective method of family planning that VPE cannot give e.g. IUD, Injectables, sterilization, diaphragm etc.
- vi Common ailments**

- Convulsion
- Persistent Diarrhoea

C. Advantages of the Referral System

1. Explain the advantages of the referral system as:
 - i. It enables the health provider to get assistance for cases beyond his/her scope
 - ii. It saves lives
 - iii. It enables clients to have access to services that VPEs cannot provide.

D. Referral Forms

1. Display the various record forms
2. Review the use of each form
3. Ask participants to bring out the samples of referral cards given to them during record keeping session.
4. Hold up one of each of the forms and explain the referral form.

E. Where to refer Clients

1. Ask participants who have referred clients before to share information about where such clients were referred to.
2. Note points and fill in missing information as:
 - Health Post
 - Maternity Centre
 - Health Centre
 - University Hospital

3. Stress the importance of getting the community to assist in transferring people.
Community involvement is necessary to ensure success of the system.

F. Follow up

1. Explain that it is very important that participants should follow up with referred clients.
2. Ask participants to brainstorm on why follow-up is important.
3. Note points and fill in missing ones as:

Importance of follow up:

- To make sure that the patient or client has actually visited the centre to which he/she was referred.
- To find out instructions given to the patient and to ensure they are carried out.
- To make sure that the drugs prescribed or dispensed have been bought, collected and used.
- To make sure the advice given to clients is practiced.
- To find out if clients are improving or getting worse.

Summarize the session and stress the importance of involving the community when planning the referral system. This will ensure that the logistics of the system are adequately addressed.

Review/ Evaluation

1. Explain what Referral means
2. State 4 importance of referral
3. Identify when you to refer a client to the clinic

TOPIC: RECORD KEEPING

DURATION: 1 HOUR

Learning Objectives

The participants will be able to:

1. Define record keeping
2. State 3 reasons for record keeping
3. Explain the points to note on record keeping
4. State the different types of record keeping

Training Materials

- ✓ Flip sheet stand
- ✓ Flip sheets
- ✓ Markers
- ✓ Pictorials

A. Introduction

1. Display the session's objectives and read out to participants
2. Discuss and explain each objective
3. Encourage questions. Provide answers
4. Ask participants if any of them is familiar with records and record keeping. If yes, ask them to share the information with participants.
5. Note contributions
6. Introduce the topic and explain as simple as possible the terms 'management' and 'evaluation'.

A. Definition

1. Ask participants to brainstorm on the definition of record keeping
2. Note points and expand as:

Record keeping is a process of record different events and activities of any programme (as they occur) and the outcome.

B. Reasons for Record Keeping

1. Ask participants to brainstorm on the reasons for record keeping
2. Note points on the flipchart
3. Clarify and fill in missing information as:
 - To provide basis for statistics for Growth monitoring and promotion
 - To know the type of common health problems needing intervention
 - To know if there are problems or improvements in health services and conditions.
4. Repeat the reasons several times and request participants to repeat after you to ensure better understanding.
5. Explain each reason in a simple way to ensure that points are well understood by participants.

C. Important Points on Record Keeping

1. Explain the important points to note on record keeping in a simple way to ensure that participants have a better understanding of the topic.
 - Record must be accurate
 - There must be prompt recording
 - The recording must be submitted to the lead supervisor at the appropriate time and regularly.

D. Types of Records

1. State the type of records that VPEs use in the process of providing services as:
 - a) VPE tally sheets
 - b) VPE referral cards
 - c) Growth Chart records
 - Growth monitoring card
 - Immunisation card
 - d) Three wall flipcharts

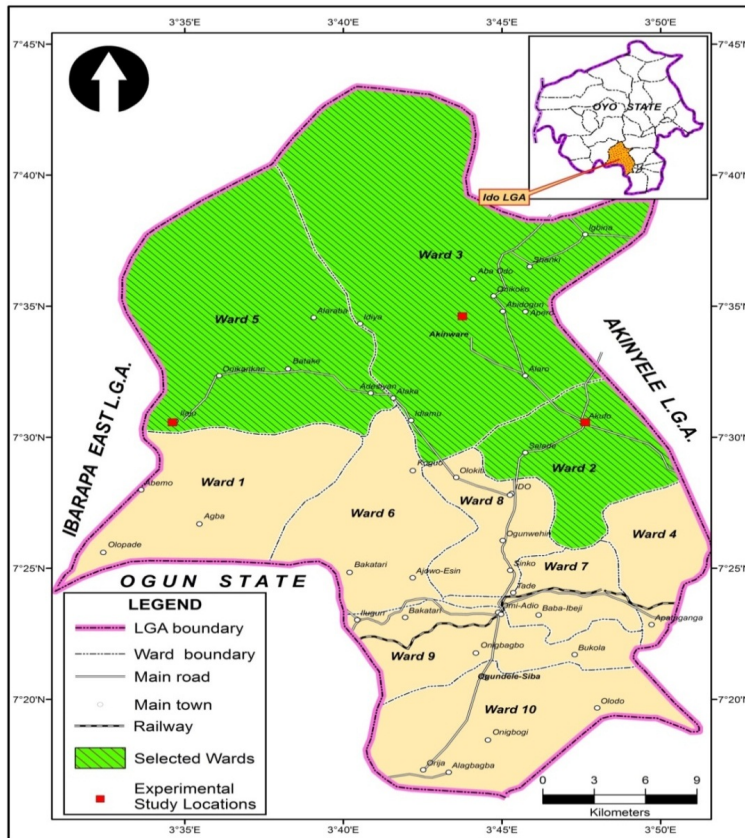
E. Description of Record Cards

1. Display all record keeping forms and provide each participant with sample of each.
2. Describe each record keeping form in the language participants will understand.
3. Ask participants to volunteer to describe one form each and state what each pictograph on the card indicates.
4. Note description and fill in missing information as:
 - i. **Tally sheet** for services provided has the following pictographs to indicate:
 - Sex of client
 - Age group of client i.e. adult, school age, under 5 years, under 1 year
 - Common ailments treated or referred
 - Health education and promotion carried out
 - New client or follow-up case
 - ii. **Referral Card** has pictographs to indicate sex, age group, and what client is being referred for.
 - iii. **Growth monitoring card** has pictograph of baby with landmarks indicating health danger signs and very dangerous signs, identified by the child's monthly weight charted with the age of the child.
 - iv. **Immunisation card** has pictograph of each of the six killer diseases
 - v. **Three wall charts** have community demographic profiles as pictographs for births, deaths and delivery outcome (live or still births).

REVIEW/EVALUATION

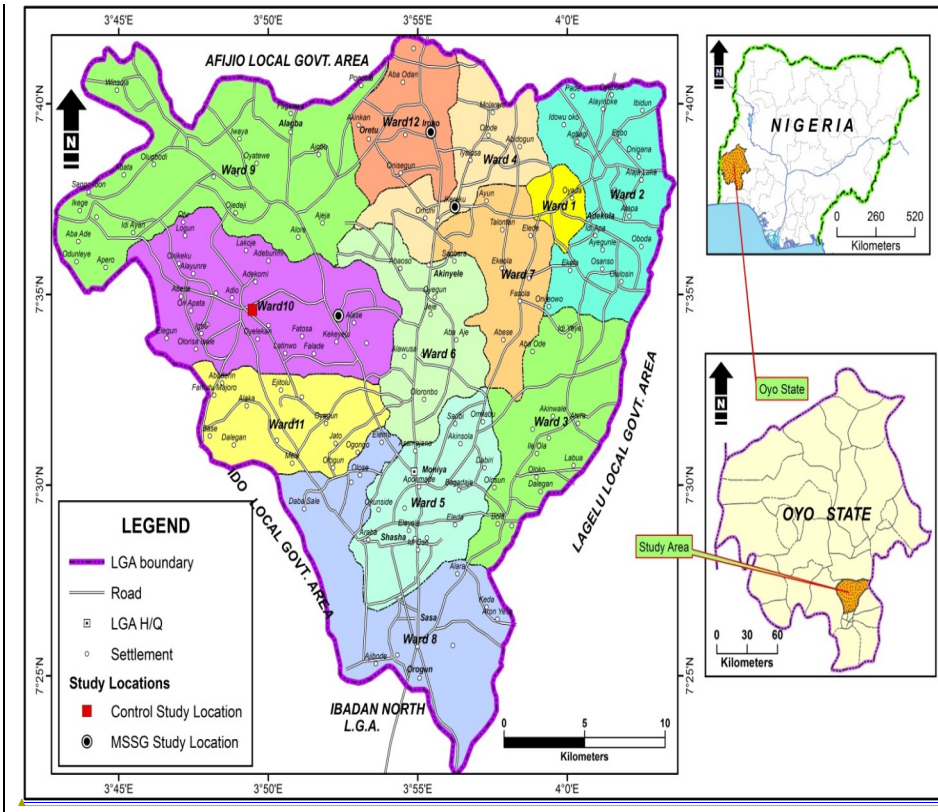
1. What is record keeping?
2. What are the reasons for record keeping?
3. What are the points to note in record keeping?

Appendix VII- Map of experimental site



Ido LGA map showing location of the EG sites. Source: Department of Geography, University of Ibadan, September, 2015

Appendix VIII- Map of the control sites



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Akinyele LGA map showing locations of the MSSG and CG sites. Source: Department of Geography, University of Ibadan, September, 2015

Appendix IX- Additional results from the study

Malaria treatment offered by mothers across four time points

Time Point	EG	MSSG	CG	p
Month 1	16(4.2%)-PCM & Vit.C	11(2.9%)-PCM& Vit.C	10(2.6%)-PCM &Vit.C	>0.05
	8(2.1%)-Antimalarial Drugs	2(0.5%)-Antimalarial Drugs	4(1.1%)-Antimalarial Drugs	
	4(1.1%)-Not Treated	2(0.5%)-Not Treated	2(0.5%)-Not Treated	
	28	15	16	
Month 6	2(0.6%)-PCM & Vit.C	17(4.7%)-PCM& Vit.C	12(3.3%)-PCM & Vit.C	<0.05
	2(0.6%)-Antimalarial Drugs	4(1.1%)-Antimalarial Drugs	4(1.1%)-Antimalarial Drugs	
	0(0%)-Not Treated	2(0.6%)-Not Treated	0(0%)-Not Treated	
	4	23	16	
Month 9	1(0.3%)-PCM & Vit.C	13(4.4%)-PCM & Vit.C	8(2.7%)-PCM& Vit.C	<0.05
	1(0.3%)-Antimalarial Drugs	0(0%)-Antimalarial Drugs	2(0.6%)-Antimalarial Drugs	
	0(0%)-Not Treated	1(0.3%)-Not Treated	0(0%)-Not Treated	
	2	13	12	
Month 12	4(2.8%)-PCM & Vit.C	16(11.2%)-PCM & Vit.C	4(2.8%)-PCM & Vit.C	<0.05
	1(0.7%)-Antimalarial Drugs	5(3.5%)- Antimalarial Drugs	3(2.1%)- Antimalarial Drugs	
	0(0%)-Not Treated	0(0%)- Not Treated	1(0.7%)-Not Treated	
	5	21	8	