DEMOGRAPHIC DETERMINANTS OF EXCLUSIVE AND NON-EXCLUSIVE BREASTFEEDING AMONG NURSING MOTHERS IN BENUE STATE

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NIGERIA

AUGUST, 2014

TITLE PAGE

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BY

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M.Ed/Educ/06307/2010-2011

A THESIS SUBMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES, AHMADU BELLO UNIVERSITY, ZARIA IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER DEGREE IN HEALTH EDUCATION

DEPARTMENT OF PHYSICAL AND HEALTH EDUCATION
AHMADU BELLO UNIVERSITY ZARIA, NIGERIA

AUGUST, 2014

DECLARATION

I declare that the work in this thesis report entitled "Demographic Determinants of Exclusive and Non-Exclusive Breastfeeding among Nursing Mothers in Benue State" has been written and compiled by me in the Department of Physical and Health Education under the supervision of Dr (Mrs) V. Dashe and Prof C.E. Dikki. The information derived from the literature has been duly acknowledged in the text and list of references provided. No part of this thesis was previously presented for another degree at any university.

_____	_____	_____
AKOSU, P. TERSEER	Signature	Date

CERTIFICATION

This thesis entitled **"DEMOGRAPHIC DETERMINANTS OF EXCLUSIVE AND NON-EXCLUSIVE BREASTFEEDING AMONG NURSING MOTHERS IN BENUE STATE"**, written by Akosu Peter Terseer meets the regulations governing the award of Master Degree in Health Education of Ahmadu Bello University, Zaria, and is approved for its contribution to knowledge and literary presentations.

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DEDICATION

I honour God Almighty for the success of this work. Your love oh! Lord enfolds me, Your power protects and upholds me and Your presence watches over me.

To my dear parents, Mr. Matthew Aor Akosu, and Mrs. Agnes M. Akosu. I salute your endearing values, vision and passion which has been inspiring, empowering and reforming me to discover, pursue and fulfill my educational dream. You are indeed living global legends whose legacies are beyond history.

And to the blessed memory of my grandmother, Mama Aya Celina Hanmeza Kaiorgba, the literally milk of my boyhood from which I have never been weaned

ACKNOWLEDGEMENTS

Upon completion of this work prescribed by the University and marked by defense, the researcher celebrates the unspeakable privilege for the award of Master Degree in Health Education. He is grateful for the honour of this hour, mindful of the thorough and rigorous training he has undergone and determines to fulfill the obligations he undertook two years ago.

The researcher registers his immeasurable gratitude to Almighty and Ever living God, Creator of heaven and earth, of all that is seen and unseen, he praises and thank God for bringing him to the end of this programme. Father, he surrenders his past to Your mercy, the present to Your love and the unknown future to Your kind providence.

The researcher remains greatly indebted to his supervisors, Dr. (Mrs) V. Dashe and Prof C.E. Dikki, who on account of this work, sacrificed their sleep and tight schedules to thoroughly check, guide, direct and made useful, concrete criticisms and corrections, for this work to stand the test of time. Through his act of anxiety and uncertainty, they suppressed his fear and granted success to this work.

He expresses his sincere gratitude to Prof (Mrs) M.A Suleiman, Dr. (Mrs) E.E Adamu, Dr. E.A Gunen (PG Coordinator), Prof (Mrs) T.N Ogwu, Dr. Umar Musa and Prof J.A Gwani. Apart from the knowledge he gained under their mentorship, they have also been instrumental to this work, through their professional advice, utmost concern and the enthusiasm they showed in reading and contributing impactfully to the instrument that was used in this study for data collection.

He salutes his beloved parents Mr. Matthew Aor Akosu, and Mrs Agnes M. Akosu, who kindled his hope and provided him with emphatic support and an overwhelming show of

love which makes him speaks anew and more reformed. From you, he asks patience in the hard task of securing this degree and they granted in good measure.

To the one that gives him hope, the literally milk of my boyhood from which I have never been weaned, my late grandmother Mama Aya Celina Hanmeza Kaiorgba. Mama, he deeply honours your kind friendship, reliance on your counsel, and dependence on your provisional help which lays the foundation for him to partake and have a stake in the promise and future of tomorrow. He is sincerely thankful.

He expresses his warmest regards to his late aunties, Mrs Victoria Mlumun Orvaa, and Mrs Terngu Uke who passed on rather suddenly. He is being reminded each day how fragile the thread of his life is, how suddenly he may be summoned away by death from the things that engrossed his attention here below. He likes to say rest in peace with the Lord. Amen.

He also appreciates his cherishable siblings, Terwase Cornelius, late Vershima Martins, Orduen Charles, Lubem Emmanuel, Member Nancy, the twins Denen Jacob and Dekera Joseph. Your love, concern and encouragement makes this work a reality today.

To his heartfelt cousins, Terna Thaddeus, Erdoo Jessica, Sever Faustina, Mngueshima Magdalene, Aondoakaa Stumen, Aondohemba Dizzy Brown, Hundekera, Hembadoon and Terhile. They have always wished him well in the course of his studies.

Thank you Lubem Emmanuel for the laptop you provided for him. His friends Gabriel Iange, Emmanuel Ityowua, Ngutor Akura, Shadows Terwase Anji, Buter Terngu, X-tra Don, Kapeleo, Apuu Bem, Zasha Tersoo, Nicholas Ayoo, Agnes Akanyi, Adoo Terumbur, Mimi Iorfa, Philip Kor (Trouser), Mark Ijov (Markopolo), Terngu Kange, Victor Terwase (Lord I), David Ate, Emma Pilla, Raphael Chia, Gisa Alexander, and of course Susan Mnena Uke, for your tiredless support and prayers which makes this work a reality today.

He is grateful to Iember Orduen, Josephine Lubem, Fanen Orduen Akosu, Doom Lubem Akosu, Bemdoo Lubem Akosu and Msendoo Kaiorgba, for their assistance and love respectively.

Finally he appreciates all his course mates for the common knowledge they shared together. It was indeed a worthwhile experience.

Thank you and God bless.

ABSTRACT

The purpose of this study was to examine demographic determinants of exclusive and non-exclusive breastfeeding among nursing mothers in Benue State, Nigeria. To achieve this purpose, 10 hospitals were randomly selected using multi-stage sampling technique (simple random, stratified, and purposive sampling techniques). The data was collected using close-ended questionnaire. 500 questionnaires were distributed to nursing mothers who visited antenatal clinics in the randomly selected hospitals, from which 455 were duely completed and returned. Frequencies of percentages and cross tabulation statistics were used to answer research questions. Associations between demographic determinants and breastfeeding practices were analysed using Chi-square statistics at alpha level of 0.05 to test the formulated hypotheses. The findings of the study, indicated high (99.8%) prevalence of breastfeeding among nursing mothers, out of which 83.5% exclusively breastfed for up to 4-6 months. Only 16.5% however supplemented breastfeeding. The findings of the study revealed that; mother's age significantly influenced the practice of exclusive and non-exclusive breastfeeding of babies, indicating high exclusive breastfeeding among mothers of 25years and above, and low exclusive breastfeeding among younger mothers of 19 years and below. The results further showed that, mother's level of education significantly influenced the practice of exclusive and non-exclusive breastfeeding of babies, indicating high exclusive breastfeeding practice among literate mothers with at least secondary education. Those with low educational attainment had poor or low practice of exclusive breastfeeding. Based on the results of this study, the following conclusions are drawn: Mother's age influence the practice of exclusive and non-exclusive breastfeeding of babies in Benue State. Mother's level of education influenced the practice of exclusive and non-exclusive breastfeeding of babies in Benue State. Based on the conclusions, the following recommendations are made: Special interventions should be made for young mothers with poor breastfeeding practices usually (15-19years) by health care workers to encourage them endure the herculean task of breastfeeding, through education, and nursing support to enable them breastfeed exclusively. Since education remains the most viable means of reaching mothers on the benefits of exclusive breastfeeding, health care workers should intensify education to provide mothers with complete and current information on the methods of exclusive breastfeeding in order to increase mother's knowledge of benefits derived from exclusive breastfeeding.

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ABBREVIATIONS

MER: Milk Ejection Reflex

FIL: Feedback Inhibitor of Lactation

ADA: American Dietetic Association

AAP: American Academy of Pediatrics

. EBF: Exclusive Breastfeeding

ACOG: American College of Obstetricians and Gynecologist

EFA: Essential Fatty Acids

Ig: Immunoglobulin

UNICEF: United Nations Children's Fund

WHO: World Health Organization

BFHI: Baby Friendly Hospital Initiative

EPA: Ecosahexaenoic Acid

DHA: Docosahexaenoic acid

AHRQ: Agency for Healthcare Research and Quality

GI: Gastrointestinal tract

SID: Sudden Infant Syndrome

WIC: Women Infant and Children

FGD: Focus Group Discussion

IGAB: Interagency Group for Action for Breastfeeding

NEC: Necrotizing enterocolitis

USDHHS: U.S Department of Health and Human Services

OPERATIONAL DEFINITION OF TERMS

1. Exclusive breastfeeding – infants of ages four to six months who are fed only on breast milk by their mothers.

2. Predominant breastfeeding – An infant who receives breast milk including liquids but is not given artificial milk by their mother.

3. Complementary feeding: These are infants who are breastfed on breast milk and other supplements by their mothers.

4. Non-exclusive breastfeeding: This is an act of breastfeeding infants on breast milk and other liquids by their mothers.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Infant feeding methods are a major determinant of infant nutritional status, which in turn, affects infant morbidity and mortality. Among feeding methods, breastfeeding is of particular importance because this practice is fundamental for growth, development, health and survival of infants. Diallo, Bell, Moutquine, & Garrant (2005) stated that about 5.6 million infants die annually because they do not receive adequate nutrition. Breastfeeding therefore has been classified by scientists and health workers as the best natural food for babies and breast milk contains all the necessary nutrients for the healthy growth of the child. The benefits of breastfeeding are numerous ranging from providing the infant with antibodies, to helping ward off risks of illnesses and providing the baby with all his/her nutritional needs (Mundi, 2008). According to the World Health Organization (WHO) (2004), breast milk provides all the energy and nutrients that the infant needs for the first six months of life, and it provides about half or more of a child's nutritional needs during the second half of the first year, up to one third during the second year of life. Furthermore, breast milk not only protects the infant against infectious and chronic diseases, but also promotes sensory and cognitive development in addition to contributing to the health and well-being of mothers, helping in birth spacing, reducing the risks of ovarian and breast cancers as well as increasing family and national resources (WHO, 2004).

Generally, breastfeeding is practiced all over the world, though with variation in duration. Considering that the introduction of other food supplements at an early age often increase the risks of infections to the infant which may at times lead to life-threatening conditions such as diarrhea, the WHO and United Nations Children's Fund (UNICEF)

(2004), recommended that infants be exclusively breastfed for six months and, thereafter, up to 24 months, introducing other supplements to support the infant's growth and development.

In view of the many benefits afforded by mothers and infants in breastfeeding, governments have also set goals and rates for breastfeeding practices. The Nigerian government has earmarked six University Teaching Hospitals as Baby Friendly Hospital Initiative (BFHI) centres, in Benin, Enugu, Maiduguri, Lagos, Jos, and Port-Harcourt, with the objective of reducing infant malnutrition, morbidity and mortality, as well as promoting the health of mothers. Since the inception of BFHI in 1991, a series of programmes, seminars, workshops and conferences aimed at promoting breastfeeding practices have been organized. The BFHI itself has proved to be an effective method of improving breastfeeding practices worldwide (Salami, 2006). To further strengthen the practice of exclusive breastfeeding, government also approved a breastfeeding policy in 1998. The code on the marketing of substitutes of breast milk was reviewed and amended in May, 1999, to further introduce stiffer fines and a clearer definition of breast milk substitutes. These measures are aimed at increasing the rate of exclusive breastfeeding as well as the early initiation of breastfeeding so as to achieve the World Summit on Children 1990 goal of universal exclusive breastfeeding for infants up to six months of age (Mundi, 2008).

These measures notwithstanding, evidence showed that the practice of exclusive breastfeeding (though fast improving) is still low in many parts of the world. In Nigeria, the rate increased from 2% to 20% in infants 0-3 months and from 1% to 8% in infants 4-6 months between 1990 and 1999 (National Planning Commission (NPC)/UNICEF, 2001). The Nigeria Demographic and Health Survey (NDHS) (2008), however, revealed that 97% of Nigerian children under age five were breastfed at some point in their life. A small proportion of infant (13%) were exclusively breastfed throughout the first six months of life. More than seven in ten (76%) children of ages 6-9 months received complementary foods. 16% of

infants less than six months of age were fed with a bottle with nipple, and the proportion bottle fed peaked at 17% among infant in the age ranges of 2-3 and 4-5 months. However, less than half of infants (38%) were put to the breast within one hour of birth and only 68% started breastfeeding within the first day. Relatively, among children born in the five year preceding the survey in Benue State, showed that 97.8% of children ever breastfed. 64.1% started breastfeeding within one hour of birth. 90.2% began breastfeeding within 1 day and 38.7% introduce pre-lacteal feed. Only 0.5% children were exclusively breastfed. These proportions indicate a marginal level of decline from the 1990, 1991, 1999, 2003 and the 2008 surveys (NDHS, 2008).

These dwindling attitudes regarding the practice of exclusive and non-exclusive breastfeeding have been attributed to several socio-economic, cultural and socio-demographic factors. Thus, this study purposed to examine the influence of demographic determinants of exclusive and non-exclusive breastfeeding among nursing mothers in Benue State, Nigeria.

1.2 The Statement of the Problem

Breastfeeding practices have undergone tremendous medical, cultural and sometimes religious challenges and debate. In an attempt to achieve successful breastfeeding globally by the year 2000, the World Health Organization and United Nations Children's Fund (1993), launched the Baby Friendly Hospital Initiative (BFHI) in 1991. The BFHI is a global effort involving 160 countries, of which 95 of them are in the developing world where Nigeria is inclusive (Salami, 2006). This project is to support, protect, and promote the practice of exclusive breastfeeding for six months and thereafter until 24 months of age. Several medical literatures have also established the superiority of breast milk over the other types of milk for the nourishment of the human infants, offering better health benefits.

Although breastfeeding is universal in the country, the trend is towards giving other feeds in addition to breast milk. Generally, the practices are more diversified and are

characterized by late initiation of breastfeeding, the administration of substances other than maternal milk, and the introduction of weaning foods within one month following the infant's birth. The Nigerian Integrated Child Health Cluster Survey (ICHCS, 2003), indicated that a major area of need in infant breastfeeding was early initiation. The survey indicated a decline from 56% in 2000 to 34% in 2002. The Nigeria Demographic and Health Survey (NDHS, 2008) reports, also revealed a 13% exclusive breastfeeding rate which is a decline from 17% indicated in 2003 report. The 2008 report further revealed that 34% of infants aged 0-5 months were given plain water in addition to breast milk, while 10% were given milk other than breast milk. Only 32% of infants under 24 months of age were still on breast milk.

Considering the percentage of mothers practicing breastfeeding, it should not be surprising that Nigeria is still saddled with high incidence of malnutrition and its associated infant mortality. Many factors have been adduced to influence these practices. The decisions are very often influenced more by other factors than by health considerations alone. According to Sika-Bright (2010), the factors which influence the decision to exclusively or non-exclusively breastfeed include; mother's marital status, employment status, friends method of feeding their babies, social support and baby's age. Several other demographic studies conducted over the years (i.e National Demographic Sample Survey (NDSS), 1966; Nigeria Fertility Survey (NFS), 1982; National Population Policy (NPP), 1988; Integrated Child Health Cluster Survey (ICHCS) 2003; Nigeria Demographic and Health Survey (NDHS), 1990, 1999, 2003, & 2008; have also identified similar factors to include; mother's level of education, occupation, and income level to influence mother's choice of exclusive breastfeeding. While significantly expanded in content, the primary objective of the previous surveys has been on emerging issues such as awareness and behaviour regarding HIV/AIDS and other sexually transmitted infection, poverty, gender inequality, fertility, mortality, nuptiality, awareness and use of family planning methods, sexual activity, nutritional status

of mothers and infants, early childhood mortality and maternal mortality, maternal and child health and of course breastfeeding practices. However, these factors are apparent in the studies conducted over the years. The existence of a large scale of mothers practicing exclusive and non-exclusive breastfeeding, and its associated causes remained elusive in the studies. It is not definite or clear whether demographic factors significantly or insignificantly influence the practice of exclusive and non-exclusive breastfeeding. It is worthy of note that up till recently, the principal foci of attention has been demographic factors and the practice of exclusive breastfeeding. None of the studies conducted over the years concern itself much with demographic factors and the practice of exclusive and non-exclusive breastfeeding of babies and Benue State in particular. Therefore, the study purposed to examine demographic determinants of exclusive and non-exclusive breastfeeding among nursing mothers in Benue State.

1.3 Research Questions

This study sought to provide answers to the following specific research questions:

1. Does mother's age influence the practice of exclusive and non-exclusive breastfeeding of her baby in Benue State?
2. Does mother's level of education influence the practice of exclusive and non-exclusive breastfeeding of her baby in Benue State?
3. Does mother's occupation has any impact on the practice of exclusive and non-exclusive breastfeeding of her baby in Benue State?
4. Does mother's level of income influence the practice of exclusive and non-exclusive breastfeeding of her baby in Benue State?
5. Does family views regarding breastfeeding influence mother's decision to exclusively or non-exclusively breastfeed her baby in Benue State?

1.4 Purpose of the Study

The main purpose of this study was to examine demographic determinants of exclusive and non-exclusive breastfeeding among nursing mothers in Benue State. The specific purposes of the study are:

a) To assess whether mother's age has influence on the practice of either exclusive or non-exclusive breastfeeding of babies.
b) To assess whether mother's level of education influence the practice of exclusive and non-exclusive breastfeeding of babies.
c) To assess whether mother's occupation has any impact on the practice of exclusive or non-exclusive breastfeeding of babies.
d) To find out whether mother's level of income influence the practice of exclusive or non-exclusive breastfeeding.
e) To determine if family views regarding breastfeeding influence mother's decision to exclusively or non-exclusively breastfeed her baby.

1.5 Significance of the Study

The findings of this study would give an insight into areas where health education campaigns are required to influence and promote the adoption of exclusive breastfeeding. Specifically:

The findings of the study would benefit employers of labour to plan more appropriately the period of time for lactating mothers in order that it may not interfere with their work or working hours.

It would also make progress towards obtaining demographic data on exclusive and non-exclusive breastfeeding among nursing mothers attending antenatal clinics in Benue State. This, in addition, will benefit nutritionists, health planners in Benue State to formulate

policies and strategies that are geared towards the promotion of exclusive breastfeeding on specific group of women and locations in which it is poorly practiced.

The findings of the study would benefit health workers to develop special intervention measures on specific age ranges of mothers who poorly practice exclusive breastfeeding.

The findings of this study would help health educators, nurses, nutritionists and curriculum planners to develop informed programmes for nursing mothers on the benefits of breastfeeding. This in addition, would update the curriculum to educate students in higher institutions of learning in preparing for future parenthood to adopt an effective method of breastfeeding the infant.

1.6 Hypotheses

Based on the research questions, one major hypothesis and five sub-hypotheses were formulated for the purpose of this study:

Major Hypothesis

Demographic determinants of nursing mothers do not influence the practice of exclusive and non-exclusive breastfeeding of babies in Benue State of Nigeria.

Sub-Hypotheses

1.6.1 Mother's age will not significantly influence the practice of exclusive and non-exclusive breastfeeding in Benue State.

1.6.2 Mother's level of education will not significantly influence the practice of exclusive and non-exclusive breastfeeding in Benue State.

1.6.3 Mother's occupation will not significantly influence the practice of exclusive and non-exclusive breastfeeding in Benue State.

1.6.4 Mother's level of income will not significantly influence the practice of exclusive and non-exclusive breastfeeding in Benue State.

1.6.5 Family views regarding breastfeeding will not significantly influence the practice of exclusive and non-exclusive breastfeeding in Benue State.

1.7 Basic Assumptions

On the basis of research evidence, the following basic assumptions are drawn for the purpose of this study:

1. That low educational attainment of nursing mothers account for failure to exclusively breastfeed the infant for up to 4-6 months.
2. That poor working conditions of nursing mothers caused the mother to discontinue exclusive breastfeeding and introduce other feeds to complement breastfeeding.
3. That babies born to mothers in the highest level of income are less likely to receive a prelacteal feed than babies born to mothers in the lowest level of income.

1.8 Delimitation of the Study

This study is delimited to the followings:

Demographic determinants of nursing mothers such as age, occupation, level of education, level of income and family/friends views and the practice of exclusive and non-exclusive breastfeeding of babies in Benue State.

Nursing mothers who attended postnatal clinics in Benue State.

1.9 Limitations of the Study

The findings of this research must be viewed in line of the limitations of the study. First, the relationship between types of breastfeeding and the infant mortality and morbidity were probably underestimated by some mothers as they did not attend post-natal care for further assessment and possible advice by the health care providers. Such nursing mothers were not included in the sample of the study. The study considered only nursing mothers that attended postnatal clinics.

The study did not take into account the differences between the infants who were raised by their biological mothers and those raised by significant others, and this could involve some bias in the decision to exclusively or non-exclusively breastfeed the infant. Based on this, the researcher convinced the nursing mothers to provide accurate information on the method they feed their babies, as this was not to "witch hunt" them but was merely for academic purpose.

Nursing mothers with astute traditional and religious beliefs were difficult to convince to complete the questionnaire. However, with the help of the nurses on duty, they were assured of the confidentiality of their responses, as the exercise was mainly for academic purpose.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

Available research evidences related to demographic determinants of exclusive and non exclusive breastfeeding among nursing mothers are reviewed in this chapter under the following subtitles:

2.2 Concept of Breast and Production of Breast Milk

2.3 Exclusive Breastfeeding

2.3.1 Benefits of Exclusive Breastfeeding

2.4 Non-Exclusive Breastfeeding

2.4.1 Benefits of Non-Exclusive Breastfeeding

2.4.2 Challenges of Non-Exclusive Breastfeeding

2.5 Demographic Determinants of Exclusive and Non-Exclusive Breastfeeding

2.5.1 Breastfeeding and Mother's Age

2.5.2 Breastfeeding and Mother's Level of Education

2.5.3 Breastfeeding and Mother's occupation

2.5.4 Breastfeeding and Mother's Level of Income

2.5.5 Breastfeeding and the Cultures of the Nursing Mother's

2.6 Stages of Breast Milk

2.7 Importance of Breast Milk in the Growth and Development of Infants

2.8 Basic Nutritional needs of Infants

2.9 Summary

2.2 Concept of Breast and Production of Breast Milk

Breasts are mammary secreting glands composed mainly of glandular tissue, which is arranged in lobes, approximately 20 in number. Each lobe is divided into lobules that consist of alveoli and ducts. The aveoli contain acini cells, which produce milk and are surrounded by myoepithelial cells, which contract and propel the milk out. Small lactiferous ducts, carrying milk from the alveoli, unite to form larger ducts. Several large ducts (lactiferous tubules) conveying milk from one or more lobe emerge on the surface of the nipple. The lactiferous tubules are distensible. Myoepithelial cells are oriented longitudinally along the ducts and, under the influence of oxytocin, these smooth muscle cells contract and the tubule becomes shorter and wider (Vorherr, 1974; Woolridge, 1986). As the tubule distends during active milk flow, it may provide a temporary reservoir for milk (while the myoepithelial cells are maintained in a state of contraction by circulating oxytocin). This is often shown diagrammatically and described as lactiferous sinuses (or ampullae). These researchers (Fraser & Cooper, 2003), further explained that the nipple is composed of erectile tissue which is covered with epithelium cells and contains plain muscle fibres, which have a sphincter - like action (milk ejection reflexes or let down) in controlling the flow of milk. Surrounding the nipple is an area of pigmented skin called the areola, which contains Montgomery's glands. These produce a substance which acts as a lubricant during pregnancy and throughout breastfeeding (Fraser & Cooper, 2003).

Breast, nipple and areola vary considerably in size from one woman to another. The breast is supplied with blood from the internal and external mammary arteries and branches from the intercostal arteries. The veins are arranged in a circular fashion around the nipple. Lymph drains freely between the two breasts and into lymph nodes in the axillae and the mediastinum. During pregnancy, oestrogen and progesterone (“mothering hormones” responsible for milk ejection reflexes (MER)) induce alveolar and ductal growth as well as

stimulating the secretion of colostrums. Although colostrums is present from the 16 week of pregnancy, the production of milk is held in abeyance until after delivery, when the levels of placental hormones fall. This allows the already high levels of prolactin (hormone responsible for suckling and milk removal) to initiate milk production. Continued production of prolactin is caused by the baby feeding at the breast with concentrations highest during night feeds. Prolactin is involved in the suppression of ovulation, and some women may remain anovular until lactation ceases, although for others this effect is not as prolonged (Kennedy, *et al*, 1989; Romos, *et al*, 1996). If breastfeeding has to be delayed for a few days, lactation can still be initiated because prolactin levels remain high, even in the absence of breast use, for at least the 1st week (Kochenour, 1980). Prolactin seems to be much more important to the initiation of lactation than to its continuation. As lactation progresses, the prolactin response to suckling diminishes and milk removal becomes the driving force behind milk production (Applebaum, 1970). This protein accumulates in the breast as the milk accumulates and it exerts negative feedback control on the continued production of milk. Removal of this autocrine inhibitory factor (sometimes referred to as FIL - feedback inhibitor of lactation) by removing the milk allows milk production to be stepped up again. It is because this mechanism acts locally (i.e within the breast) that each breast can function independently of the other. It is also the reason that milk production slows as the baby is gradually weaned from the breast. If necessary, it can be stepped up again if the baby is put back to the breast more often (e.g because of illness) (Fraser, *et al*, 2003).

Milk release is under neuroendocrine control. According to Wong *et al* (2002), the nipple is stimulated by the suckling infant and the posterior pituitary is prompted by the hypothalamus to produce oxytocin. This oxytocin is the hormone responsible for the milk ejection reflex (MER), or let - down reflex. This milk ejection reflex can be triggered by thoughts, sights, sounds, or odours that the mother associates with her baby such as hearing

the baby cry. Many women reported a tingling "pins and needles" sensation in the breasts as let down occurs, although some mothers can detect milk ejection only by observing the sucking and swallowing of the infant. Let down may also occur during sexual activity, since oxytocin is released during orgasm. Wong, *et al,* (2002), further explained that oxytocin is the same hormone that stimulates uterine contractions during labour. It contracts the mother's uterus after birth to control postpartum bleeding and to promote uterine involution. Thus, mothers who breastfeed are at decreased risk for postpartum hemorrhage. These uterine contractions that occur with breastfeeding can be painful during and after the feeding, particularly in multiparas (more than one baby), for 3 to 5 days after giving birth. Prolactin and oxytocin have been referred to as the "mothering hormones" since they are known to affect the postpartum woman's emotions as well as her physical state. Many women have reported feeling thirsty or very relaxed during breastfeeding, which may be due to these hormones (Wong, *et al;* 2002).

2.3 Exclusive Breastfeeding

In an effort to promote breastfeeding, the 54th World Health Assembly which met in Geneva, May, 2001 affirmed the importance of exclusive breastfeeding for 6 months. The new resolution (Ref: Agenda item 13:1, infant and young child nutrition, A) 54/45 in Paragraph 2(4) urged member states to (Baby Milk Action, 2001): support exclusive breast feeding for six months as a global public health recommendation taking into account the findings of the WHO Expert Technical Consultation on optimal breast feeding and to provide safe and appropriate complementary foods, with continued breast feeding for up to two years or beyond (Fraser, et al; 2003). Since then researches have therefore shown that EBF for up to six months is associated with increased weight and length gains.

The WHO/UNICEF (2007), defines exclusive breastfeeding as an infant's consumption of human milk with no supplementation of any type (no water, no juice, no non-

human milk, and no foods) except for drops or syrups consisting of vitamins, minerals, and medications (nothing else) for six months and thereafter up to 24 months with timely introduction of other supplements to support the infant's growth and development. According to Ekele & Hamidu (1997), EBF means no other drink or food is given to the infant, and the infant is fed exclusively on breast milk from birth to 4-6 months of age. This is also one of the cardinal components of the Baby Friendly Hospital Initiative (BFHI) which is aimed at protecting, promoting and supporting breast feeding for optimal maternal and child health. It has been shown for some time that exclusively breast fed babies who consume enough breast milk to satisfy their energy needs will easily meet their fluid requirements even in hot dry climates (Ashraf, *et al*; 1998, Sachder, *et al*; 2000). Extra water will do nothing to speed the resolution of physiological jaundice should it occur (Nicolle, *et al;* 2002; Carvahlo, *et al*; 2001). The only constituents effect of giving additional fluids to breast fed infants is to reduce the time for which they are breast fed (de Chateau, *et al*; 1999, Fenstain *et al*; 1998, Herrera, 2000; White, 2002).

In an effort to increase global breastfeeding rates, the WHO and UNICEF launched the Baby Friendly Hospital Initiative (BFHI) in 1991. This initiative is comprised of ten steps to successful breastfeeding with the aim of providing a health care environment for infants where breastfeeding is the norm (Martens, *et al;* 2000). Maternity care facilities must implement each of the ten steps to earn the designation of "baby-friendly" hospital. Some of the steps of the BFHI include: "train all health care staff in skills necessary to implement the baby friendly policy; help mothers initiate breastfeeding within 30 minutes of delivery; give newborn infants no food or drink other than breast milk, unless medically indicated; practice rooming-in by allowing mothers and infants to remain together 24-hours-a-day; have a written breastfeeding policy that is routinely communicated to all health care staff; inform all pregnant women about the benefits and management of breastfeeding; show mothers how to

breastfeed and how to maintain lactation even if they should be separated from their infants; encourage breastfeeding on demand; give no artificial teats or dummies to breastfeeding infants; foster the establishment of breastfeeding support groups and refer mothers to them on discharge from hospital or clinic'', (DiGirolamo, 2001; Fraser et al, 2003). Studies have reported that, as of October 2000, only 27 hospitals had actually completed the process of becoming designated as baby friendly (DiGirolamo, 2001). In order to assess the effects of the BFHI on breastfeeding rates and infant growth, 17 infants were followed for 12 months, and their weights and heights were measured at 1, 2, 3, 6, 9, and 12 months. Infants in the experimental group weighed more than the control group at one and three months, and a similar trend was observed for gain in length. The authors concluded that EBF accelerates weight and length gain in the first few months (Kramer et al., 2002). However, this acceleration was not seen at 12 months (Cahill and Wagner, 2002b; Kramer et al., 2002). A positive relationship was observed between infant growth rate and fat, lactose, protein, and energy content of breast milk during the first six months of life in a separate study (Mitoulas et al., 2002). Breastfed infants have slower rates of gastric filling and faster rates of gastric emptying, which may contribute to growth rate (Heinig & Dewey, 1996). Results of two randomized studies showed that EBF for 4 months resulted in earlier development of certain milestones by the infants (Dewey et al, 2001). Infants exclusively breastfed for six months crawled and walked sooner, compared to infants who were exclusively breastfed for only four months. Similar results were reported in another study conducted to explore the relationship between breastfeeding and growth. One hundred and eighty-five children were followed from birth to 20 months. Exclusively or predominantly breastfed infants, for at least four months, had significantly (P=0.04) larger ponderal index increments compared to children who were not. Among infants in a lower socioeconomic status (SES) group, those who were fully breastfed for at least four months had larger length increments (0.59 cm) compared to

children who were not. However, these differences in ponderal index and length were not significant in infants between six and 20 months of age. Investigators concluded that EBF may have more benefits to the infant, particularly during the early months of infancy (Eckhardt, *et al*; 2001). In another study by Onyango, *et al;* (1999), continued breastfeeding during the second year of life was positively associated with growth in a cohort of 264 children, but it was also seen that linear growth of these children was hindered by poor sanitation. A study showed that prolonged breastfeeding (>24months) was positively associated with linear growth during the second and third year of life in 443 African toddlers (Simondon et al., 2001). Several observational studies have also found that breast milk keeps the infant adequately hydrated, even in tropical settings, such that additional fluids, including water, tea, and other liquids are not required by the infant when breastfed (Black and Victora, 2002).

In addition to physiological benefits, a number of studies have shown that breastfeeding is associated with positive effects on neurodevelopment. These advantageous effects have been attributed to the presence of long chain polyunsaturated fatty acids in human milk. The fatty acids, ecosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), present in human milk may be responsible for advanced neurodevelopment (ADA Reports, 2001). Higher erythrocyte DHA concentration and better visual function was observed in full term breastfed infants compared to formula-fed infants (Heinig & Dewey, 1996). A meta analysis of 20 studies suggested that breastfeeding, compared to human milk substitute feeding, was associated with significantly higher cognitive development scores in infants (Anderson et al., 1999). In order to examine the association between breastfeeding and developmental milestones, 1,656 infants were followed for eight months. Milestones included fine motor skills, general motor skills, and language development. Results showed that increased duration of breastfeeding was associated with increased mastery of the milestones,

and the authors concluded that breastfeeding benefited neurodevelopment (Vestergaard et al, 1999). In a separate study, infants who were exclusively breastfed for at least three weeks had fewer neurological abnormalities at nine years of age compared to infants who were not breastfed (Heinig & Dewey, 1996).

2.3.1 Benefits of Exclusive Breastfeeding

In a scientific research such as the studies conducted by the US Agency for Healthcare Research and Quality (AHRQ), (2007) and WHO, (2007) revealed quite a number of benefits to exclusive breastfeeding for both the infant and the mother as follows:

Greater immune health

During breastfeeding, antibodies pass to the baby. This is one of the most important features of colostrums (the breast milk created for newborns). Breast milk contains several anti-infective factors such as bile salt stimulated lipase (protecting against amoebic infections, lactoferrin (which binds to iron and inhibits the growth of intestinal bacteria and immunoglobulin A (IgA) protecting against microorganisms (AHRQ, 2007; WHO, 2007) breast milk also enhances maturation of the gastro intestinal (GI) tract and contains immune factors that contribute to a lower incidence of diarrheal illness, and celiac diseases (Barnad, 1997; Lopez-Alarcon, Villapando, and Fajardo, 1997; Scariah; Grummer-Strawn, and Fein, 1997).

Lesser infections

Breastfed infants receive specific antibodies and cell-mediated immunologic factors that help protect against Otitis media, respiratory illness such as respiratory syncytial virus and pneumonia, urinary tract infections, bacteria and bacterial meningitis (Cushing, *et al*; 1998; Lopez, 1997). Among other studies showing that breast fed infants have a lower risk of infection than non-breastfed infants are:

- In a 1993 university of Texas Medical Branch Study, a longer period of breastfeeding was associated with a shorter duration of some middle ear infections (Otitis media) in the first two years of life.
- A 1995 study of 87 infants found that breastfed babies had half the incidence of diarrheal illness, 19% fewer cases of any otitis media infection, and 80% fewer prolonged cases of otitis media than formula fed babies in the first twelve months of life.
- Breastfeeding appear to reduce symptoms of upper respiratory tract infections in premature infants up to seven months after release from hospital in 2002 study of 39 infants.
- A 2004 case-control study found that breastfeeding reduced the risk of acquiring urinary tract infections in infants up to seven months of age, with the protection strongest immediately after birth.
- Breastfeeding reduces the risk of acute otitis media, non-specific gastro enteritis, and severe lower respiratory tract infections.

Reduced sudden infant death syndrome

Breastfed infants are less likely to die from sudden infant death syndrome (SIDS) (Ford & Kelsey, 1993). Breastfed babies have better arousal from sleep at 2-3 months. This coincides with the peak incidence of sudden infant death syndrome. A study conducted at the university of Munster found that breastfeeding halved the risk of sudden infant death syndrome in children up to the age of two.

Less diabetes

Infants exclusively breastfed have less chance of developing diabetes mellitus type 1 than peers with a shorter duration of breastfeeding and an earlier exposure to cow milk and solid foods. Breastfeeding also appears to protect against diabetes mellitus type 2, at least in

part due to its effects on the child's weight (AHRQ, 2007; WHO, 2007). Ricci (2007) stated that breastfeeding exclusively is associated with avoidance of type 2 diabetes and heart disease. Breastfeeding may also have a protective effect against childhood lymphoma and insulin-dependent diabetes (Davis, 1998; Gerstein, 1994).

Less child obesity

Breastfeeding appears to reduce the risk of extreme obesity in children aged 39 to 42 months. The protective effect of breastfeeding against obesity is consistent, though small, across many studies and appears to increase with the duration of breastfeeding (AHRQ, 2007; WHO, 2007). According to a report of American Academy of Pediatrics (AAP) (2006a, 2006b) exclusive breastfeeding is less likely to result in overfeeding, leading to obesity. A study has also shown that infants who are bottle fed in early infancy are more likely to empty the bottle or cup in late infancy than those who are breastfed. Bottle feeding, regardless of the type of milk is distinct from feeding at the breast in its effect on infants self-regulation of milk intake. According to the study, this may be due to one of three possible factors, including that when bottle feeding, parents may encourage an infant to finish the contents of the bottle whereas when breastfeeding, an infant naturally develops self-regulation of milk intake. A study in today's pediatrics associates solid foods given too early to formula-fed babies before 4 months old will make them 6 times as likely to become obese by age three. It does not happen if the babies were given solid foods with breastfeeding (AHRQ, 2007; WHO, 2007).

Less tendency to develop allergic disease (atopy)

There is a lower incidence of allergy among breastfed infants from families at high risk. Allergic manifestations occur at a greater rate and are more severe in formula fed infants (Halken and Host, 1996). In children who are at risk for developing allergic diseases (defined as at least one parent or sibling having atopy), atopic syndrome can be prevented or delayed

through exclusive breastfeeding for four months, though these benefits may not be present after four months of age. However, the key factor may be the age which non-breast milk is introduced rather than duration of breastfeeding. Atopic dermatitis, the most common form of eczema can be reduced through exclusive breastfeeding beyond 12 weeks in individuals with a family history of atopy, but when breastfeeding beyond 12 weeks is combined with other foods incidents of eczema rise irrespective of family history.

Less necrotizing enterocolitis in premature infants

Necrotizing enterocolitis (NEC) is an acute inflammatory disease in the intestines of infants. Necrosis or death of intestinal tissue may follow. It is mainly found in premature births. In one study of 926 preterm infants, NEC developed in 51 infants (55%). The death rate from necrotizing enterocolitis was 26% NEC was found to be six to ten times more common in infants fed formula exclusively, and three times more common in infants fed a mixture of breast milk and formula, compared with exclusive breastfeeding. In infants born at more than 30 weeks, NEC was twenty times more common in infants exclusively on formula. A 2007 meta-analysis of four randomized controlled trials found a marginally statistically significant association between breastfeeding and a reduction in the risk of NEC.

Other long term health effects

Breastfeeding may decrease the risk of cardiovascular disease in later life, as indicated by lower cholesterol and C-reactive protein levels in adult women who has been breastfed as infants. Although a 2001 study suggested that adults who had been breastfed as infants had lower arterial dispensability than adults who had not been breastfed as infants, the report concluded that breastfed infants "experienced lower mean blood pressure" later in life. It further stated that there is an association between a history of breastfeeding during infancy and a small reduction in adult blood pressure, but the clinical or public health implication of

this finding is unclear. A 2006 study found that breastfed babies are better able to cope with stress later in life (AHRQ, 2007, WHO, 2007).

Intelligence

Studies have examined whether breastfeeding in infants is associated with higher intelligence later in life. Possible association between breastfeeding and intelligence is not clear. The 2007 review for the AHRQ found no relationship between breastfeeding in term infants and cognitive performance. However, the 2007 review for the WHO suggests that breastfeeding is associated with increased cognitive development in childhood. The review also states that the issue remains of whether the association is related to the properties of breast milk itself, or whether breastfeeding enhances the bonding between mothers and thus contributes to intellectual development.

Horwood, Darlow and Mogridge (2001), tested the intelligence quotient (IQ) scores of 280 low birth weight children at seven or eight years of age. Those who were breastfed for more than eight months had verbal IQ score 6 points higher (which was significantly higher) than comparable children breastfed for less time. They concluded "These findings add to a growing body of evidence to suggest that breast milk feeding may have small long term benefits for child cognitive development.

In 2006, Der and others, having performed a prospective cohort study, sibling pairs analysis and meta-analysis, concluded that breastfeeding has little or no effect on intelligence that breastfeeding has little or no effect on intelligence in children. The researchers found that most of the observed association between breast feeding and cognitive development is the result of confounding by maternal intelligence (AHRQ, 2007; WHO, 2007).

Breastfeeding is a cost effective way of feeding an infant, providing nourishment for the infant at a less cost to the mother. Frequent and exclusive breastfeeding can delay the

return of fertility through lactational amenorrhea, though breastfeeding is an imperfect means of birth control (AHRQ, 2007).

Bonding

Breastfeeding provides a unique bonding experience and increase maternal role attainment (Lawrence, 1999). During breastfeeding, hormones are released to help strengthen the maternal bond. Support for a mother while breastfeeding can assist in familiar bonds and help build a paternal bond between father and child.

Hormone release

Breastfeeding releases oxytocin and prolactin hormones that relax the mother and make her feel more nurturing toward her baby. Breastfeeding soon after giving birth increases the mother's oxytocin levels, making her uterus contract more quickly and reducing bleeding. (AHRQ, 2007; WHO, 2007). Breastfeeding also decreases risk of postpartum hemorrhage (Lawrence 1999; Ricci, 2007).

Weight loss

Mothers who are breastfeeding tend to return to the pre-pregnancy weight more quickly (Dewey, Heining & Nommsen, 1993). As the fat accumulated during pregnancy, is used to produce milk, extend breastfeeding for at least 6 months can help mothers' lose their weight. However, weight loss is highly variable among lactating women; monitoring the diet and increasing the amount/intensity of exercise are more reliable ways of losing weight. The 2007 review for the AHRQ found the effect of breastfeeding in mothers on returning to pre-pregnancy weight was negligible, and the effect of breastfeeding on postpartum weight loss was unclear".

Natural postpartum infertility

Breastfeeding may delay the return to fertility for some women by suppressing ovulation. A breastfeeding woman may not ovulate or have regular periods, during the entire

lactation period. Though the period in which ovulation is absent differs in each woman. This lactation amenorrhea has been used as an imperfect form of natural contraception with greater than 98% effectiveness during the first six month after birth if specific nursing behaviours are followed. It is possible for women to ovulate within two months after birth while fully breastfeeding and get pregnant again (AHRQ & WHO, 2007). According to Pryor & Huggins (2007), breastfeeding can afford some protection against conception, although it is not a reliable contraception method.

Other long term heath effects

Women who have breastfed have a decrease risk of ovarian, uterine and breast cancer (Enger 1998; Rosenblett & Thomas, 1995). A 2007 study indicated that lactation for at least 24 months is associated with 23% lower risk of coronary heart diseases (AHRQ & WHO, 2007). Although the review found no relationship between history of lactation and the risk of osteoporosis, mothers who breastfeed longer than eight months benefit from bone re-mineralization. Also breastfeeding diabetic mothers require less insulin. According to Malmo University study published in 2009, women who breastfed for a longer duration have a lower risk for contracting rheumatoid arthritis than women who breastfed for a shorter duration or who had never breastfed.

2.4 Non-Exclusive Breastfeeding

Commercial formulas are produced to replace or supplement breast milk. Formulas are sometimes called “breast milk substitutes” or ‘artificial breast milk’ because manufacturers must adapt them to correspond to the components in breast milk as much as possible. According to Fraser et al (2003), it is an offence under law to sell any infant formula as being suitable for the newborn unless it meets the compositional and other criteria set out in the infant formula and follow-on formula regulations. The researchers, further stress that despite the claims made by formula manufacturers, there is no obvious scientific

basis on which to recommend one brand over another. There is no necessity for the mother to stick to one brand, especially if she finds that one brand seems to disagree with her baby, she should try switching brands. This has been made easier by the availability of ready-to-feed sachets and cartons, as with these, mothers can experiment without having to buy large quantities. Babies with underlying metabolic disorders, such as galactasoemia or phenylketonia will need the appropriate prescribed breast milk substitute. Nevertheless, though artificial milk may be highly processed, factory produced product, inevitably there will from time to time be inadvertent errors. Recorded errors in the past include too much or too little of an ingredient, accidental contamination, incorrect labeling and foreign bodies (Fraser, *et al*, 2003). Therefore, according to Bobak, *et al* (1989), mothers should be advised to inspect the contents of the tin or packet before using it and if it looks or smells strange, return it to the place it was purchased. Nevertheless, physicians who recommend formula's for infant feeding should provide written instructions as to the amount of formula to be fed the infant over 24 hours and when to increase the amount to ensure meeting the growing infant nutrition needs.

Ricci (2009), however, opined that formula feeding requires more than just opening, pouring, and feeding. Parents need information about the types of formula available, preparation and storage of formula, equipment, feeding positions and the amount to feed their new born. The mother also needs to know how to prevent lactation.

Non-exclusive breastfeeding therefore means breast milk along with infant formula, baby food and even water, depending on the age of the child. The decision to feed a baby infant formula may be the result of the mother's or partner's personal preference, the influence of other significant factors such as maternal age, mother's level of education, employment, income level, family members, or simply a lack of familiarity with breast feeding. Occasionally, there is no other option, the mother may have extensive breast scarring

or may have a bilateral mastectomy; the mother may be taking medications that prelude breastfeeding; or the baby may be adopted (some mothers are able to include lactation for an adopted baby). Rarely an infant may have galactosemia and must be fed lactose-free formula (Wong, *et al*; 2002). According to McKinney, *et al;* (2009), some women are simply embarrassed by breastfeeding, seeing the breasts only in a sexual context. Many mothers have little experience with family or friends who have breastfed infants. The woman's partner or mother may not be supportive of breastfeeding. Occasionally a woman requires medications that would harm the infant. A frequent reason that mothers choose formula feeding instead of breastfeeding is lack of adequate understanding and education about the two methods.

The decline in the practice of breastfeeding, such as in developed countries like the U.S., has been observed in developing countries as well including Nigeria (Galler et al., 1998). Sub-optimal breastfeeding practices still prevail in many countries, especially in rural communities. A study that examined infant feeding practices in 12 rural communities revealed that delayed initiation of breastfeeding, prelacteal feeding, and failure to practice EBF were widespread. Moreover, colostrums was considered "hot milk" causing diarrhea and stomach pain, and thus was not given to infants (Semega-Janneh, *et al*; 2001). In a study conducted with 136 women, it was observed that stress during labour and delivery was associated with delayed onset of lactation (Grajeda & Perez-Escamilla, 2002).

A study conducted to assess breastfeeding knowledge and beliefs among adults revealed that in addition to having inadequate knowledge about the benefits of EBF, employment was one of the primary factors affecting breastfeeding (Bovell-Benjamin, *et al*; 2001). A study conducted with 222 mothers to assess their attitudes about and barriers to breastfeeding showed that mothers perceived breastfeeding to be time consuming. They also thought that breast milk was insufficient for the infant (Cohen, *et al*; 1999). This decrease in

breastfeeding rates around the world has led to serious implications for infant health in developing countries (Amador, *et al*; 1994). This decline in EBF has led to an increase in the prevalence of protein energy malnutrition (PEM) (Scarlett, *et al*; 1996). Lack of support from a significant other and negative attitude of the significant other toward breastfeeding have been observed as major predictors of bottle feeding. Fathers who support bottle feeding are more likely to believe that "breastfeeding is bad for the breasts and interferes with sex" (Losch, *et al*; 1995).

2.4.1 Benefits of Non-Exclusive Breastfeeding

Breastfeeding is considered the best nutritional option for babies by the major medical organizations, but it is not right for every mother. Commercially prepared infant formulas are a nutritious alternative to breast milk, and even contain some vitamins and nutrients that breastfed babies, need to get from supplements. Manufacturers under sterile conditions, commercial formulas attempt to duplicate mother's milk using a complex combination of proteins, sugars, fat and vitamins that would be virtually impossible to create at home. So if you do not breastfeed your baby, it is important that you see only a commercially prepared formula and that you do not try to create your own (Hirsh, 2008c). In addition to medical concerns that may prevent breastfeeding, for some women, breastfeeding may be too difficult, stressful or demanding. In a review by Hirsh (2008) found the following benefits of formula feeding.

Convenience: Either parents (or another Caregiver) can feed the baby a bottle at anytime (although this is true for women who pump their breast milk). This allows the mother to feel more involved in the crucial feeding process and the bonding that often comes with it.

Flexibility: Once the bottles are made a formula feeding mother can leave her baby with a partner or caregiver and know that her little ones' feedings are taken care of. There is no need to pump or to schedule work or other obligations and activities around the baby's feeding

schedule. And formula feeding mothers do not need to find a private place to nurse in public. However, if mother is out and about with baby, she will need to bring supplies for making bottles.

Time and frequency of feeding: Because formula digests slower than breast milk, formula fed babies usually need to eat less often than do breastfed babies.

Diet: Women who opt for formula feed do not have to worry about the things they eat or drink that could affect their babies.

2.4.2 Challenges of Non-Exclusive Breastfeeding

As with breastfeeding, there are some challenges to consider when deciding whether to formula feed.

Organization and preparation: Enough formula must be on hand at all times and bottles must be prepared. The powdered and condensed formulas must be prepared with sterile water (which needs to be boiled until the baby is at least 6 months old). Ready to feed formulas that can be poured directly into a bottle without any mixing of water tend to be expensive. Bottles and nipples need to be sterilized before the first use and then washed after every use (this is also true for the breast feeding women who give their babies bottles of pumped breast milk). Bottles and nipples can transmit bacteria if they are not cleaned properly. Bottles left out of the refrigerator longer than 1 hour and any formula that a baby does not finish must be thrown out. And prepared bottles of formula should be stored in the refrigerator for longer than 24 to 48 hours (check the formula label for complete information). Some parents warm bottles up before feeding the baby, although this often is not necessary. The microwave should never be used to warm a baby's bottle because it can create a dangerous 'hot spots'. Instead, run refrigerator bottles under warm water for a few months if the baby prefers a warm bottle to a cold one. Or the baby's bottles can be put in a pan of hot water (away from

the heat of the stove) with the temperature tested by squirting a drop or two of formula on the inside of the wrist (Hirsch, 2008).

Lack of antibodies: None of the important antibodies found in breast milk are found in manufactured formula, which means that formula does not provide the baby with the added protection against infection and illness that breast milk does (Hirsh, 2008).

Expense: formula can be costly. Powdered formula is the least expensive, followed by concentrated, with ready-to-feed being the most expensive and specially formulas (i.e. soy and hypoallergic) cost more, sometimes far more than the basic formulas (Hirsch, 2008).

Possibility of producing gas constipation: Formula fed babies may have more gas and firmer bowel movements than breastfed babies (Hirsch, 2008).

Cannot match the complexity of breast milk: Manufactured formulas have yet to duplicate the complexity of breast milk, which changes as the baby's needs changes (Hirsch, 2008).

2.5 Demographic Determinants of Exclusive and Non-Exclusive Breastfeeding

Studies have been conducted to identify variables that influence infant feeding decisions. Many demographic factors such as maternal age, education, employment, socioeconomic and cultural factors, have been shown to influence women's decision to either exclusively or non-exclusively breastfeed their infants (Bass & Groer, 1997; Goksen, 2002; Scott & Binns, 1999).

2.5.1 Breastfeeding and Mother's Age

Age is an important demographic variable and the primary basis of demographic classification. The age structure of the practice of exclusive and non exclusive breastfeeding is however not found in the earlier conducted Nigeria Demographic and Health Survey (NDHS'). However, other studies have found significant influence of age in the practice of exclusive and non exclusive breastfeeding.

Research have shown that women who are older (>25 years) are more likely to initiate and continue breastfeeding compared to younger women (Dennis, 2002b; Ertem, *et al*; 2001; Scott & Binns, 1999; Wagner & Wagner, 1999). Research published between 1980 and 1999 indicated that only 9.1% of mothers younger than 20 years of age continued to breastfeed to six months, whereas women who were older were more likely (15-34%) to have breastfed for six months. A feeling of embarrassment and regard for breastfeeding as a private behaviour has been associated with maternal age (Wambach & Cole, 2000). Adolescent girls who had positive attitudes toward and more knowledge about breastfeeding were more likely to consider breastfeeding (Losch, *et al*; 1995; Wambach & Cole, 2000). Mothers who were young, single, from low income and ethnic minority groups, and who had negative attitudes toward breastfeeding were reported as the least likely to breastfeed (Dennis, 2002b; Wagner & Wagner, 1999). A study was conducted in 1995 with teenage mothers in the Michigan WIC program. Breastfeeding initiation rate and predictors of breastfeeding initiation in these teenage mothers were evaluated. Data from the 1995 Pregnancy Nutrition Surveillance System were used for this study, and a total of 3,534 teenagers between the ages of 12 and 19 years were included. Only 35.1% of mothers initiated breastfeeding (Park, *et al*; 2003). There was a significant difference ($P<0.001$) in the prevalence of breastfeeding between white (40.4%) and black (19.5%) teenage mothers. Further analyses revealed that level of education, marital status, anemia status, and smoking during pregnancy influenced the initiation rate among white teenage mothers, whereas household size, parity and level of education influenced the initiation rate among black teenage mothers. Black teenage mothers were 2.38 times less likely to initiate breastfeeding compared to white teenage mothers. The authors concluded that all teenage mothers were less likely to initiate breastfeeding. Moreover, women with these characteristics should be targeted for breastfeeding support and education (Park, *et al*; 2003). A survey of 100 teenage females in suburban showed that

although 79% of them intended to have children, only 52% planned to breastfeed. Embarrassment and increased fatigue were perceived as barriers to breastfeeding among these teenage girls (Leffler, 2000). These teenagers were also not certain whether breastfeeding was beneficial to the nursing mother. The authors concluded that teenage girls should be targeted for breastfeeding education (Leffler, 2000). A similar but separate study was conducted to evaluate adolescents' attitudes and subjective norms toward breastfeeding. In this study, 203 males and 236 females from high schools were surveyed. Although adolescents had positive attitudes regarding the advantages of breastfeeding, they had negative subjective norms about breastfeeding, especially among males. Fewer males versus females had seen a mother breastfeeding her infant (P=0.001), and overall, males had more incorrect beliefs about breastfeeding compared to females. Compared to females, males more strongly believed that supply of breast milk was related to breast size (P=0.004), people compared the breastfeeding mother to a cow (P=0.0001), breastfed infants were less "self-sufficient" later in life (P=0.0002), and that when breastfeeding, a mother exposes her breasts to the public (P=0.0002). The authors concluded that because subjective norms for fathers are important determinants of breastfeeding, education of adolescent males about breastfeeding is also necessary (Goulet, *et al*; 2003). A study conducted was designed to examine the effect of a breastfeeding campaign for adolescent females on scores of attitudes, norms, and intentions regarding breastfeeding. The intervention group included 207 adolescent females exposed to the breastfeeding campaign compared to a control group (n=205). The mean score for intention to breastfeed was significantly higher (P<0.05) in the intervention group (4.07) compared to the control group (2.55). Females exposed to the campaign had more positive attitudes, subjective norms and intentions toward breastfeeding than the control group (Kim, 1998). These investigators concluded that educating adolescents about breastfeeding was effective and positively promoted breastfeeding (Kim, 1998). Results of a study that assessed

students' attitudes toward breastfeeding revealed that although respondents had generally positive attitudes about breastfeeding, a significant number of college students considered breastfeeding to be unattractive for a woman (Forrester, *et al*; 1997). Of 346 high school and 244 college students, only 135 individuals acknowledged having been breastfed. Embarrassment was perceived as a major barrier to breastfeeding, and breastfeeding in public was not considered acceptable by many of the students (Forrester, *et al*; 1997). A study conducted to assess attitudes toward breastfeeding in the north-central region involving students, faculty, and staff showed that although students perceived breastfeeding as healthy, they considered bottle-feeding more convenient and less embarrassing than breastfeeding. Although all participants (n=107) agreed that breastfeeding is better than bottle-feeding, they believed that breastfeeding is a private affair and should not be done in public (O'Keefe, et al; 1998). Thus, age has an important impact on intent to breastfeed.

Mundi (2008), found positive influence of maternal age in the practice of exclusive breastfeeding, which shows that the practice of exclusive breastfeeding is highest among mothers between the ages of 20-24 (84.4%), compared with mothers in other categories. In fact only 25% of mothers above 45 years have practice exclusive breastfeeding. This may be because women within this age bracket are more full time housewife and may have more time to breastfeed. According to McKinney, *et al*; (2009), women who are most likely to breastfeed are Asian or White, ages 25 to 34 years. This is because they have a college education and live in the mountain or pacific regions of the United States and receive special supplemental nutrition programmme for Women, Infants and Children (WIC) benefits. The study further revealed that African-American still have the lowest rates of breastfeeding than other groups in recent years. A study by Ekele & Hamidu (1997), observed that majority of mothers who practice exclusive breastfeeding were between 20-29 years. Out of the 120 respondents sampled in the practice of exclusive breastfeeding, 17.5% were between 18-24

years of age, 42.5% fall between 25-31 years, 23.4% were 32-38 years, while those aged 39-45 years had 13.3%. 45 years and above had 3.3%. By implication, exclusive breastfeeding was highest among women between 25 to 31years of age. The researchers concluded that older mothers were more likely to exclusively breastfeed than the younger ones. Exclusive breastfeeding was significantly associated with maternal age in an assessment of breastfeeding practices of 228 nursing mothers. Most mothers that practice exclusive breastfeeding, 190 (83.3%) were aged between 20 and 34 years (Ukegbu, et al, 2011). A prospective cohort study of 240 nursing mothers carried out in three comprehensive health centers of Nnamdi Azikwe University Teaching Hospital (NAUTH) found that EBF was significantly associated with maternal age ($p<0.05$). Focus group discussion showed that mothers believed that adequate nutrition and physical strength, financial and emotional support to them would increase EBF practice. A 26 year old participant in one of the focus group discussion (FGD) sessions said that "while waiting for the breast milk to flow, it is good to give baby water or glucose water, after all water is the life of a fish, it is good to give water so as to sustain the baby before breast milk starts to flow". Although all the participants in the FGDs agreed that colostrums was good for the baby. A 29 year old mother in the FGD said that "colostrums is good because it helps the child to know the taste of breast milk and will make the baby to always demand for it". Exclusive breastfeeding was therefore practiced more frequently by mothers aged 35-39 years compared with those less than 20 years old ($x2=9.89$, $p=0.0042$). Oche, Umar and Ahmed (2011), found that a total of 84 (47%) of the respondents' were between the ages of 23-32 years, while only 29 (16%) were above 38 years of age with a mean age of 29.8+10.3years. According to them age was found not to have influenced the practice of exclusive breastfeeding. They concluded that young mothers below the age of 20 were more likely to non-exclusively breastfeed their infants. Similarly, Ogunlesi, (2010), opined that maternal age does not confer any advantage on breastfeeding

practices. In their study, Piper and Parks (2001), analyzed data from 1,863 cases from the NMIHS to examine the relationship between breastfeeding intensity ratio and breastfeeding exclusivity. According to the Interagency Group for Action for Breastfeeding (IGAB), breastfeeding intensity is defined as "the continuum of partial breastfeeding, with an end point of exclusive breastfeeding" (Piper and Parks, 2001). The investigators calculated a breastfeeding intensity ratio (range=0-1), with full (exclusive) breastfeeding having an intensity ratio of 1.0 and partial breastfeeding with values less than 1.0. Results showed that 61% of mothers reported EBF during the first month, 31% during 2-3 months postpartum, and13% during 4-6 months postpartum. Higher breastfeeding intensity during the first six months postpartum was significantly (P<0.01) associated with prolonged breastfeeding. Also, breastfeeding intensity ratio was significantly and positively associated with higher maternal age (P<0.01).

2.5.2 Breastfeeding and Mother's Level of Education

Female education has severally been described as one of the strongest determinants of the practice of exclusive breastfeeding. Many studies have found significant influence on the practice of exclusive and non-exclusive breastfeeding.

According to Shealy, Li, Benton & Grummer (2005), mothers who are college graduates were more likely to breastfeed their infants than are mothers with lower levels of educational attainment. For infants born in 2007, 60% of mothers with a college education breastfed their infant at six months, compared with 41% with some college education, 31% with a high school degree, and 37% with less than a high school degree. Mothers with some college were more likely to ever breastfeed than were women with lower levels of education, and mothers who were college graduates were the most likely to breastfeed: 67 and 66% of women with no high school diploma, or a high school diploma only, respectively, ever breastfed, compared with 77% of women with some college, and 88% of women with at least

a bachelor's degree. At twelve months, women with a high school diploma only were the least likely (15%) to still be breastfeeding, followed by women without a high school diploma, and those with some college, at 22 and 21%, respectively. College graduates were also the most likely to breastfeed at twelve months, at 31%. A sample of 758 mothers were drawn for study to determine the reasons behind cessation of breastfeeding during the first year postpartum. Analysis of these data showed that women who were older, with higher education and more children, breastfed for longer duration. During the early postpartum months, the mother encountered a greater number of problems with breastfeeding, and many women chose to wean their infants before six months because they thought that "the infant was old enough" or stated that the "infant weaned itself" (Kirkland and Fein, 2003). The authors concluded that breastfeeding promotion programs should educate the mothers that the infant is not too old to be breastfed at six months (Kirkland and Fein, 2003). In an effort to determine if psychological and biomedical factors, independent of demographic factors, influenced duration of breastfeeding during the first six postpartum months, researchers conducted an observational and longitudinal study with 539 mothers. At hospital discharge, 97% of mothers were exclusively breastfeeding their infants, but this rate dropped to 83% at one month, 56% at four months, and 19% at six months. Mothers with secondary school or college education exclusively breastfed for longer duration than mothers with primary education ($P<0.01$). Mothers who breastfed their previous infants for more than six months were 14 times more likely to exclusively breastfeed their current infants for six months compared to women who breastfed their previous infants for less than one month (Cernadas et al., 2003). The duration of breastfeeding and percentage of EBF at six months was significantly ($P<0.001$) more in mothers with higher education than those with lower education. Feelings of embarrassment have been shown to be a major hindrance to breastfeeding, (Perez-Escamilla, *et al*; 1998).

A prospective cohort study of 1,059 women was conducted to identify factors associated with breastfeeding and duration of breastfeeding. Results showed that only 46.9% of the women were still breastfeeding at six months postpartum and intended duration of breastfeeding was strongly associated with prolonged breastfeeding. Also, lower maternal education, were negatively associated with breastfeeding at discharge (Scott et al., 2001a).

A study revealed that although the majority of mothers (both formula and breastfeeding) agreed that "breast is best," they still considered breastfeeding embarrassing, disgusting and inconvenient (Earle, 2002). However, through promotional and educational strategies a woman's intentions can be positively affected, thus increasing her duration of lactation (Kramer, *et al*; 2002; Wright, *et al;* 1998).

In a study of 179 mother child pairs, conducted in NAUTH, education of the respondents had no influence on the practice of exclusive breastfeeding as there was no statistically significant difference (p=0.986) between those with formal education and informal with regards to the practice of exclusive breastfeeding (Oche, et al 2011). Mundi (2008), however, found mother's level of education to be positively correlated with the act of exclusive breastfeeding. In their study, the practice of EBF increases with increasing educational attainment, ranging from 52.9% among women with no formal education to 75.8% among women with post secondary education. A closer observation of the data however, showed that more than half (61.4%) of those educated had not gone beyond post primary level. Mundi concluded that formal education had a positive influence on the practice of EBF. In a study by Ojofeitmi et al (2000), indicated that higher education of nursing mothers were associated with higher EBF rates. In statistically establishing the relationship between education and the practice of EBF, the Chi-square test showed a computed value of 92.70, the critical Chi-square value with 4 degrees of freedom at 0.05 and 0.01 levels of significance are 9.49 and 13.28 respectively. Since the computed value is much larger than

the critical values, the hypotheses that there is no relationship between women's education and the practice of EBF was rejected, meaning the practice of EBF varies with educational attainment. Further analysis of the study however revealed that the duration of EBF decreases with increasing educational attainment. Oche, *et al* (2011), however opined that education of nursing mothers had no significant influence on the practice of EBF as there was no statistically significant difference between those with formal education and informal education with regards to the practice of EBF (p=0.986). Significantly higher proportions of mothers with at least secondary education, clinic based antenatal care and delivery in health facilities initiated breastfeeding within 1 hour of birth, avoided pre-lacteal feeding and practice exclusive breast feeding for the first six months of life. The researcher concluded that maternal education below secondary level strongly contributed to pre-lacteal feeding (p=0.004) and failure to practice exclusive breastfeeding (p= 0.008). (Scott, *et al*; 2001). Sobo, *et al* (2008), stated that 5(4.2%) of nursing mothers who practice exclusive breastfeeding heard from school. This might probably be due to the reason that a tertiary institution is located around the areas of those villages. Mundi (2008), in a focus group discussion with the women found that most of the respondents aged 15-19 and above 45 years had no formal education. Those of them who were educated did not go beyond primary/Qur'anic level. The work indicates that formal education has positive influence on the practice of exclusive breastfeeding. In addition, those above 45 years appear to be more traditional in their behaviour which explains why they view the practice of exclusive breastfeeding as "strange and foreign aimed at killing the baby, for no human being can survive without water". The regression analysis of the Nigeria Demographic and Health Survey (2008) also found significant influence of education on the practice of exclusive and non exclusive breastfeeding. Infants born to mothers with at least primary education are more likely to be breastfed within one hour of birth than those born to mothers with no education.

Also Infants whose mothers have more than secondary education (33%) are less likely to receive pre-lacteal feeds than infants whose mothers have no education (68%).

2.5.3 Breastfeeding and Mother's Occupation

Many studies have shown that one of the barriers to breastfeeding is work status. With increased urbanization and industrialization, more and more women have joined the work force. An estimated 50% of women employed in the workplace are of reproductive age and return to work within one year of their infants' births (Wyatt, 2002). The Bureau of Labour Statistics reported that in 2002, 51% of women with children under 1 year of age were employed outside the home (Libbus and Bullock, 2002), and according to the Ross Mother's Survey, only 22% of women employed full-time breastfed their infants compared to 35.4% of mothers who were not employed (Libbus & Bullock, 2002).

Researchers examined the 1988 National Maternal and Infant Health Survey (NMIHS) to explore the association between employment factors associated with breastfeeding initiation and duration. Of the 26,355 mothers sampled in the NMIHS, only 1,506 cases of employed breast-feeding women were used. Results showed that maternal employment was not responsible for low rates of breastfeeding initiation. However, it was observed that breastfeeding women who returned to work weaned their infants earlier compared to breastfeeding women who did not work. The negative association between employment and duration of breastfeeding was strongest in developed countries, and duration of maternity leave was significantly ($P<0.01$) associated with duration of breastfeeding (Visness & Kennedy, 1997). Survey data from 10,530 women were analyzed to determine the association between breastfeeding and employment. Results showed that 79% (n=8,316) of the women initiated breastfeeding, and of the 4,837 mothers who planned to work postpartum, 83.5% of them initiated breastfeeding compared to 75.2% of the 5,693 mothers who did not plan to work postpartum ($P=0.001$). However, mothers who planned to return to

work before six weeks postpartum were significantly (P<0.05) less likely to initiate breastfeeding compared to mothers who were not planning to return to work (Noble, 2001). Other studies have also shown a competition between breastfeeding and work. In general, if a mother decides to return to work within six weeks postpartum, she is less likely to initiate breastfeeding (Meek, 2001; Roe, *et al*., 1999; Scott & Binns, 1999). Similar findings were reported in studies conducted overseas. It was observed that women working outside the home in Thailand were less likely to breastfeed after they resumed their work. At six months postpartum, 80% of those women working at home were still breastfeeding, whereas less than 40% of those women employed outside of the home continued to breastfeed (Yimyam, *et al*; 1999). Some studies have shown that intention to return to paid employment is associated only with breastfeeding duration but not with breastfeeding initiation (Dennis, 2002b; Meek, 2001; Wright, 2001; Wright, *et al*; 1998). To determine the effect of part-time employment on breastfeeding initiation and duration, researchers surveyed 2,615 mothers during the first month postpartum and then during months 2, 3, 4, 5, 6, 7, 9, and 12. Data from 1,488 surveys were analyzed and results showed that 76% of the mothers initiated breastfeeding. No differences in initiation rates were found between mothers who expected to work part-time and those who did not expect to return to work. However, mothers working full-time breastfed 8.6 weeks less than nonworking mothers (P<0.05), and part-time work of more than four hours per day decreased the duration of breastfeeding (Fein & Roe, 1998). Evidence suggests that there is little support for breastfeeding mothers in the workplace (Bridges, *et al;* 1997; Corbett-Dick, & Bezek, 1997). Attitudes of 69 employers toward breastfeeding revealed that 41% believed that formula-fed infants are as healthy as breastfed infants. Employers who had been exposed to breastfeeding women or women who expressed breast milk at work were more supportive of breastfeeding than those who were not exposed (Bridges, *et al*; 1997). A project that developed an information kit about breastfeeding to

inform employers about the benefits of breastfeeding revealed that the response of employers toward breastfeeding was quite favourable. However, employers were not very willing to initiate policy changes in their companies to promote breastfeeding (McIntyre, *et al*; 2002). As studies have shown, breastfed infants have fewer and less severe attacks of common illnesses. This has proven responsible for less maternal absenteeism (Cohen, *et al*; 1995). Focus groups with large employers and small employers revealed that although employers were knowledgeable about the benefits of breastfeeding, they nonetheless believed that breastfeeding would not be profitable to their organizations and would not recommend providing facilities and benefits to breastfeeding mothers in the workplace (Brown, *et al*; 2001; Moore & Jansa, 1987). In order to assess the effects of employer attitudes and knowledge on the breastfeeding behaviour of employed mothers, the researchers developed a survey and distributed it to 156 participants at a business meeting that included employers and personnel managers. Eighty-five participants completed and returned surveys. Sixty-nine percent (n=59) were women and 30% (n=26) men. A gender preferential response (Libbus & Bullock, 2002), to the questionnaire was observed, and only 53% of participants reported breastfeeding initiation in self or spouse compared to the national rate of 64%. These results were contrary to previous findings that showed that higher education was positively associated with breastfeeding initiation as these participants had at least secondary level or college level educations. Only a small percentage (18-25%) recognized the importance of promoting breastfeeding in the workplace and few (35%) believed that the workplace should be changed to allow women to breastfeed (Libbus and Bullock, 2002).

Type of work and hours of work have also been shown to influence breastfeeding (Visness & Kennedy, 1997). For example, African-American women and white women returning to professional jobs breastfed longer compared to breastfeeding mothers in clerical jobs (Kurinij, *et al*; 1989; Meek, 2001). Findings from a separate study of 1,179 (668 black

and 511 white) women showed that women who intended to return to work did so by the fourth month after delivery. Women who intended to return to full-time employment (63%) had the lowest rate of breastfeeding, and those women who did not return to work until seven months postpartum breastfed their infants longer compared to those women who returned to work earlier. Moreover, among black women, those who intended to return to part time employment were twice as likely to initiate breastfeeding in the hospital compared to those women returning to full-time employment (Kurinij, *et al*; 1989). Contrary to these findings, Visness & Kennedy (1997), found that women in service occupations breastfed for a significantly longer duration compared to women in professional jobs, even after controlling for duration of maternity leave. Planning to be employed postpartum or being employed full-time decreased breastfeeding initiation and duration (Frank, 1998), while women working part-time increased breastfeeding initiation and duration as compared to women working full-time (Auerbach & Guss, 1984; Fein & Roe, 1998). An intervention study showed that working mothers who received clinical support by the pediatrician and the nurse-midwife on a monthly basis for the first six months were more likely to practice EBF compared to women who did not receive any clinical follow-up. Results showed that 78 of 146 working mothers who received counseling and support from pediatricians and hospital staff were exclusively breastfeeding their infants at six months postpartum compared to 7 of 116 working mothers who did not receive any clinical support. The authors concluded that promotion and support of breastfeeding by knowledgeable health professionals enabled working mothers to exclusively breastfeed their infants (Auerbach, 1984; Corbett-Dick & Bezek, 1997; Valdes, et al; 2000).

Some mothers remain at home for 6 months or more after birth, while others must return to work earlier. Women who work part-time, have a supportive work environment, and likely to breastfeed longer than other women (Esposti, 2007). According to McKinney, *et al*

(2009), breastfeeding can be combined very well with working if the woman does some advance planning. Most working mothers use a pump two or three times a day during lunch and coffee breaks. Breastfeeding just before she goes to work and when she returns home decreases the time between feedings. Frequent breastfeeding during the evening and weekends will help her maintain her milk supply. In a study by Mundi (2008), showed high (78.4%) practice of exclusive breastfeeding among civil servants than women in other occupations. This could be because most of those in the civil service are more educated in addition to living in an urban area where BFHI exist. They are therefore more likely to be aware of and practice exclusive breastfeeding than their less educated and rural counterparts. This means the practice of exclusive breastfeeding varies with the women's occupation. However, further analyses of the study indicate that most (60.9%) women in the civil service breastfeed for shorter duration (not more than four months) compared with women in other occupations. Gielen, *et al;* (1991), Ryan & Martinez (1989) have identified maternal employment as obstacle to initiation and continuation of breastfeeding especially where there are no facilities in the work place and support for breastfeeding. Interestingly, 63.6% of housewives and 59.3% of traders breastfed exclusively for more than four months. The longer duration among housewives and traders could be attributed to the fact that women in such occupations are either always at home or they have flexible working hours and so they can easily attend to the infants needs without necessarily having any clash between their work in the house or market and attending to the infant. Al-Shoshan (2005), in a study, found the percentage of mothers who breastfeed was higher among those not working. The result showed that out of the 120 respondents, 11(26.8%) did not practice exclusive breastfeeding due to the type of job they do. In a study of 179 mother-child pairs, 109(61%) were full time house wives while only 21(12%) of the respondents were civil servants who practice exclusive breastfeeding (Oche, *et al*, 2011). In a separate study in the same zone as the study

area, Oche (2011), obtained an exclusive breastfeeding rate of 79%. The high rate obtained in his study may not be unconnected with the fact that all his subjects were full time house wives and therefore had enough time to carry on breastfeeding for longer periods. Although, 39 housewives compared to 19 civil servants practiced exclusive breastfeeding. This is in agreement with another study in the same study area where the authors Oche, *et al* (2011), opined that the high rate of exclusive breastfeeding by the mothers could be attributed to their being full time house wives and therefore had enough time to practice exclusive breastfeeding. Out of the 120 respondents, about 41(34%) did not practice exclusive breastfeeding. For those who were able to practice it, it may be inferred that they were readily available to breastfeed their babies and probably because majority of them have low educational status. Haider, *et al* (2000), in a study observed that as long as maternity leave remains less than six months, working class women will cut short the duration of EBF to enable them return to work as indicated by 21.9% of women, especially in institutions where there are no daycare centres where mothers can keep and breastfeed their infants. A study conducted to assess breastfeeding knowledge and beliefs among adults revealed that in addition to having inadequate knowledge about the benefits of EBF, employment was one of the primary factors affecting breastfeeding (Bovell-Benjamin, *et al*; 2001).

2.5.4 Breastfeeding and Mother's Level of Income

Income level can also contribute to women continuing or discontinuing breastfeeding early. Women in higher status jobs are more likely to have access to a lactation room and suffer less social stigma from having to breastfeed or express breast milk at work. Low income women are more likely to have unintended pregnancies, and women who's pregnancies are unintended are less likely to breastfeed their babies (Dee's, 2007). It is well documented that, women who are of high-income status and are college-educated tend to have the highest breastfeeding rate, while young mothers from low socioeconomic

backgrounds with low educational levels have the lowest breastfeeding rate. However, in developing countries, breastfeeding is inversely related to socioeconomic status (SES) (Beaudry, *et al*; 1995; Dennis, 2002b). Data collected from 1,001 low-income pregnant women were used to study the relationship between breastfeeding intention and maternal demographics, previous breastfeeding experience, and social support. Respondents were predominantly African-American (80.2%) or Hispanic (14.2%), and of these women only 50.6% planned to breastfeed. More women with previous breastfeeding experience (n=205, 77.1%) intended to breastfeed compared to women who had no breastfeeding experience (n=652, 41.9%). Irrespective of previous breastfeeding experiences, advice from health professionals was not associated with intention to breastfeed, implying that health care providers may not be effective in influencing infant feeding choices. Although 56.1% of the women received information about breastfeeding from the WIC program, this knowledge was not associated with the intention to breastfeed. Among women with no previous breastfeeding experience, it was observed that learning about the benefits of breastfeeding from different and multiple sources positively correlated (r=0.13, $P<0.01$) with intention to breastfeed. Male partners of pregnant women, older women from the community who were experienced in breastfeeding, family members, and peer educators were found to be influential factors for breastfeeding intentions (Humphreys, *et al*; 1998). A study was conducted with school-aged girls (n=346) to assess the effect of socioeconomic class on perception and knowledge about breastfeeding. Girls, in fourth to eighth grades, representing a high social class school (HS, n=149) and a low social class school (LS, n=197) were asked to complete questionnaires regarding breastfeeding. More girls from LS witnessed breastfeeding at home ($P=0.001$) or in public ($P=0.02$) compared to girls from the HS. More girls from the HS (46%) reported that they would be embarrassed to breastfeed in public compared to girls from the LS (32%) ($P=0.01$) (Nakamura, *et al*; 2003). Al-Shoshan (2005),

observed that the percentage of mothers who breastfed was higher among lower family income. Agho, *et al* (2011) opined that the average EBF rate among infants younger than 6 months of age was 16.4% (95%CI: 12.6%-21.1%) but was only 7.1% in infants in their fifth month of age. After adjusting for potential confounders, multivariate analyses revealed that the odds of exclusive breastfeeding were higher in rich (Adjusted Odds Ratio (AOR)=1.15, CI=0.28-6.69) and middle level (AOR=2.45, CI=1.06-5.68) households than poor households. Children in household in the highest wealth quintile are breastfed for the shortest duration (4-6 months) while other children are breastfed for 17-21 months (Al Shoshan, 2005). Among infants born in the five years preceding the survey, the percentage who started breastfeeding within one hour of birth was highest (47%) in the highest quintile compare to the lowest quintile (32.7%) (NDHS, 2008). Also infants born to mothers in the highest wealth quintile (39%) are less likely to receive a pre-lacteal feed than infants born to mothers in the lowest wealth quintile (71%). A good number of women may continue to regard EBF as being "too demanding" and may not have "enough breast milk" because they are not able to afford the food needed to replenish the source (breast milk) from which the infant derives its nourishment as a consequence of their low educational status which results in placements in low paying occupations. Thus, about 11.5% of them could not continue EBF because they felt they did not have 'enough breast milk' and therefore introduced other supplements.

2.5.5 Breastfeeding and the Cultures of Nursing Mothers

Cultural beliefs and practices are significant influence on infant feeding methods. Cultural influences may dictate decisions about how a mother feeds her infant (McKinney, et al 2009; Wong, *et al* 2002). Lack of support from significant others towards breastfeeding have been observed as major predictors of bottle feeding. Fathers who support bottle feeding are more likely to believe that "breastfeeding is bad for the breasts and interferes with sex" (Losch, *et al*; 1995). Similar findings were reported in other studies (Scott, *et al*; 2001b;

Wambach & Cole, 2000). Research shows that fathers have less knowledge about and positive attitudes toward breastfeeding compared to mothers (Sharma & Petosa, 1997). A study that evaluated a corporate lactation program that provided breastfeeding education and services for male employees and their partners showed that fathers who participated in breastfeeding education programs were more supportive of their partners and their female colleagues who breastfed. The average duration of breastfeeding in infants whose fathers (n=128) participated in the study was eight months, and 69% of the infants were still breastfeeding at 6 months, even though 66% of the mothers were employed (full-time or part-time). This study showed that breastfeeding education of fathers can be effective in increasing breastfeeding duration, even in working mothers (Cohen, *et al*; 2002). A survey of 123 women regarding factors influencing infant feeding decisions revealed that 78% (n=96) of respondents made the decision regarding infant feeding method before they became pregnant or during the first trimester of pregnancy. The main reason given for choosing bottle feeding over breastfeeding was the "mother's perception of father's preference" (Arora, *et al*; 2000). Family was a major source of breastfeeding information for the mother, followed by friends. However, the majority of mothers wanted more information on breastfeeding from different sources (Arora, *et al*; 2000). In a clinical trial where intervention, including breastfeeding education, was provided to mothers (n=197) and fathers (n=196) after the birth of their children, parents with higher breastfeeding knowledge scores were more likely to breastfeed than parents who had lower knowledge scores. Father's breastfeeding knowledge was significantly associated with EBF during the first month and the frequency of breastfeeding during the third and sixth months. Mothers who had higher knowledge scores were 6.5 times more likely to practice EBF at the end of the third month and 1.97 times more likely to continue to breastfeed to the end of the sixth month. Infants whose fathers had higher knowledge scores were 1.76 times more likely to be exclusively breastfed at the end of

the first month and 1.64 times more likely to be breastfeeding at the end of the sixth month (Susin, *et al*; 1999).As many as 50 of 120 cultures studied typically do not give colostrums to newborns and only begin breastfeeding after the milk has "come in". Some Fillipinos, Mexican-American, Vietnamese Hmong, Koreans and Nigerians are among these groups. (Morse, Jehle & Gamble, 1990). In India, infants may be fed liquid such as honey, tea, water, or sugar water before the initiation of breastfeeding under the belief of the family (Choudhry 1997).

Immigrants to the United States often would breastfeed infants if they were still in their own countries. In Russia, women are expected to breastfeed and formula is not available in birth houses (Callister, *et al;* 2007). However immigrants from countries where breastfeeding is the norm may breastfeed for shorter durations or not at all because they lack the support system they had in their own country. Some of these women may think that because formula is available in the hospital and they see American women using formula, it is the preferred method of feeding. They may believe breastfeeding is inferior to formula feeding and that formula will make their infants big and healthy (Hernandez, 2007). In a study by Oche, *et al*; (2011), more than half 94(53%) initiated breastfeeding in less than 30 minutes after delivery while 85(47%) did so long after 30minutes. Reasons adduced for delayed initiation of breastfeeding among eighty five mothers, included; colostrums being dirty and thought to be harmful to the child, lack of breast milk and mother or child illness. For the women who considered colostrums dirty, while awaiting the coming of the clean milk, they gave boiled water, honey, animal milk and washouts from writings of the Quran slates. The major reason for late initiation of breastfeeding in most (47%) of the respondents was colostrums not pure thus supporting the general perception in the family that in the first three days, the mother's milk is not pure therefore could harm the infant. This finding is in consonance with that of Onayande, (2007) in Ille-Ife, even though the study areas have

varying socio-cultural characteristics. While starving the child for the period of not giving colostrums, the child is also denied the benefits of the immunological constituents of colostrums and subsequently delays the proper establishment of lactation later. While awaiting the establishment of the "clean milk" the mothers gave pre-lacteal in form of boiled water, honey and animal milk under the instruction of grandmothers and or mother in-laws. A study in Kano indicated that only 1(2%) subject stopped breastfeeding before six months which is in consonance with the study from Kano, where 24% of the respondents stopped breastfeeding before the age of six months. The mothers that stopped breastfeeding before six months did so because of the consent of a new pregnancy. In the study area, the widely held cultural belief that the new pregnancy produced milk that is contaminated and thus harmful to the child hence the need to put the child off the breast became necessary. This practice has far reaching implications for the growing infants as they are exposed to malnutrition and denied all the benefits of breastfeeding. The commonest reason for stoppage of breastfeeding in this study was that the child was old enough and could eat solid foods (Ogunlesi, 2011).

The findings by Hamidu & Ekele (1997), in Sokoto showed that some mothers (especially the Hausa/Fulani primiparae) that practiced exclusive breastfeeding in the postpartum period later succumbed to pressures from grandmothers and or mother-in-laws because these "grannies" were really the custodians of the infants at home. A granny was quoted as having said "it is ungodly not to allow a baby to taste water in the Sokoto weather". Majority (71%) gave water either at the end of a feed or in between feeds as opposed to a pre-lacteal feed.

The decline in the practice of breastfeeding, such as in developed countries like the U.S., has been observed in developing countries as well (Galler, *et al*; 1998). Sub-optimal breastfeeding practices still prevail in many countries, especially in rural communities. A study that examined infant feeding practices in 12 rural communities in Gambia revealed that

delayed initiation of breastfeeding, pre-lacteal feeding, and failure to practice EBF were widespread. Moreover, colostrums were considered "hot milk" causing diarrhea and stomach pain, and thus was not given to infants (Semega-Janneh, *et al*; 2001). In a study conducted with 136 women, it was observed that stress during labour and delivery was associated with delayed onset of lactation (Grajeda & Perez-Escamilla, 2002). A study conducted with 222 mothers to assess their attitudes about and barriers to breastfeeding showed that mothers perceived breastfeeding to be time consuming. They also thought that breast milk was insufficient for the infant (Cohen, *et al*; 1999). This decrease in breastfeeding rates around the world has led to serious implications for infant health in developing countries including infants in Nigeria (Amador, *et al*; 1994). This decline in EBF has led to an increase in the prevalence of protein energy malnutrition (PEM) (Scarlett, *et al*; 1996).

Data derived from a 1995 convenience sample of low-income, primarily minority women receiving services in a public hospital were analyzed to determine the impact of attitudes, norms, parity, and experience on the intent to breastfeed. Data were collected using a 70-item breastfeeding questionnaire completed by 367 primiparous (one) and 596 multiparous (more than one) women. Among primiparous women, social norms and breastfeeding attitudes of the mother predicted breastfeeding intention. The woman's mother, baby's father, and the woman's doctor strongly influenced the mother in making her infant-feeding decisions (Kloeblen-Tarver, et al; 2002). Similar findings were reported in a separate study (Wagner & Wagner, 1999). To explore reasons for early termination of breastfeeding, 220 mothers were interviewed. The main reason given for termination of breastfeeding was that the child did not want it (McLennan, 2001). Breastfeeding practices of close family members and subjective norms influenced mother's breastfeeding practices. Perception of "insufficient milk" by others in the community was also one of the reasons for mothers to discontinue breastfeeding (McLennan, 2001).

During the first five months, the major reason given by mothers to discontinue breastfeeding was “insufficient milk supply” (Kirkland & Fein, 2003). The mothers thought that they were not producing enough milk or that the breast milk did not satisfy the infant. Factors related to nutrition and lifestyle patterns were most predominantly chosen as reasons for cessation of breastfeeding during first two months and 3-5 months.

2.6 Stages of Breast Milk

Human milk is a highly complex species specific fluid uniquely designed to meet the needs of the human infant. Human milk contains antibodies that provide some protection against a broad spectrum of bacteria, viral and protozoan infections. According to Fraser, et al; (2003), the human milk varies in its composition as follows:

With the time of day (for example, the fat and protein content is lowest in the morning and highest in the afternoon). With the stage of the lactation (for example, the fat and protein content of colostrums is higher than in mature milk). In response to maternal nutrition (for example, although the total amount of fat is not influenced by diet, the type of fat that appears in the milk will be influenced by what the mother eats). McKinney, et al; (2009), however, explained that the composition of breast milk changes in three phases viz: colostrums, transitional milk, and mature milk.

The major secretion of the breast during pregnancy and the first 7 to 10 days after giving birth is colostrums. Colostrums is a thick, yellowish fluid and is more concentrated than the mature milk (foremilk and hind milk) and is extremely rich in immunoglobulin’s, especially secretory IgA (immunoglobulin A) which helps to protect the infant’s gastro intestinal tract from infection. Concentration of protein and minerals, but less fat than mature milk, colostrums help establish the normal flora in the intestines and its laxative effect speeds the passage of meconium (McKinney, et al; 2009).

McKinney, et al; (2009), further states that transitional milk appears, as the milk changes from colostrums to mature milk. Immunoglobulin's and proteins decrease and lactose, fat and calories increase. The vitamin content is approximately the same as that of mature milk.

After approximately 2 weeks of delivery, mature milk (foremilk and hind milk) replaces transitional milk. Initially there is a release of bluish white foremilk that is part skim milk (about 60% of the volume) and part whole milk (about 35% of the volume). It provides primarily lactose, protein and water-soluble vitamins. The hind milk or cream (about 5%) is usually let-down to 20 minutes into the feeding, although it may occur sooner. It contains the denser calories from fat necessary for optimal growth and contentment between feedings. Because of this changing composition of human milk during each feeding, it is important to breast feed the infant long enough to supply a balanced feeding. Milk production gradually increases, so that by the time the infant is 2 weeks old, the mother produces 720 to 900ml of milk every 24 hours. (Wong, et al; 2002).

The most dramatic change in the composition of milk usually occurs during the course of a feed. At the beginning of the feed the baby receives a high volume of relatively low fat milk (this has come to be known as the foremilk). As the feeding progresses, the volume of milk decreases but the proportion of fat in the milk increases, sometimes to as much as five times the initial value (Hall, 1999; Jackson, et al; 1987). This has come to be known as the hind milk).

2.7 Importance of Breast Milk in the Growth and Development of Infant

Human milk is species specific having evolved overtime to optimize the growth and development of the infant and young child. It has been classified by scientists and health workers as the best natural food for babies. According to Mundi (2008), breast milk contains all the necessary nutrients for the healthy growth of the child. The benefits are numerous

ranging from providing the infant with antibodies, helping ward off risks of illness and providing the baby with all his nutritional needs. Accordingly, WHO (2004), stated that breast milk provides all the energy and nutrients that the infant needs for the first six months of life, and it provides about half or more of a child's nutritional needs during the second half of the first year up to one-third during the second year of life. Furthermore, breast milk not only protects the infant against infectious and chronic diseases, but also promotes sensory and cognitive development in addition to contributing to the health and well-being of mothers, helping in birth spacing reducing the risks of ovarian and breast cancers as well as increasing family and national resources. The American Academy of Pediatrics (AAP) (2005a) and American Dietetic Association (ADA) (2005) recommended that only breast milk be given for the first 6 months after birth. Breastfeeding should continue until the infant is at least 12 months old with the addition of solids beginning at 6 months of age. WHO and UNICEF (2006), further strengthened the recommendation that infants be exclusively breastfed during the first six months of life and that infants be given solid or semi-solid complementary foods in addition to continued breastfeeding from age 6 months to 24 months or more when the baby is fully weaned.

Exclusive breastfeeding is recommended because breast milk is uncontaminated and contains all the nutrients necessary for infants in the first few months of life. In addition, the mother's antibodies in breast milk provide immunity to disease. Early supplementation is discouraged for several reasons. First, it exposes infants to risk of infection. Second, it decreases infant's intake of breast milk and therefore the frequency of breastfeeding, which reduces breast milk production. Third, in low resource settings, supplementary food is often nutritionally inferior.

AAP (2007), further states that the breastfed infant is the reference or normative model against which all alternative feeding methods must be measured with regard to growth, health, development and all other short and long term outcomes.

Human milk is ideal for infant growth and development. The composition of breast milk changes throughout the lactation period according to each infant's requirement and has an appropriate balance of nutrients that are easily digested and bioavailable (Dewey, 2000). Studies have shown that breast milk has low concentrations of the amino acids, methionine, phenylalanine, and tyrosine, and high levels of cystine and taurine. This composition of breast milk prevents central nervous system damage in infants and aids in neurodevelopment (Picciano, 2001). According to ADA (2005), breast milk not only provides energy but also contains enzymes such as lipoprotein lipase, pancreatic lipase, and amylase, which aid in the digestion of nutrients. Breast milk also provides fat and water-soluble vitamins, and minerals contained in breast milk are more bioavailable compared to infant formula and are present in required quantities for the infant. On an average, breast milk has been shown to provide 375 and 500 kcal/d at 6 and 11months respectively (Dewey, 2000). While others consider complementary feeding of breastfed infants necessary to promote optimal growth and development during the first few years of life, studies have shown that EBF for six months provides adequate nutrition for normal growth of the infant up to six months of age (Dewey, 2001b). The relatively low content of protein and sodium in human milk places less load on the immature kidney of the infant (ADA Reports, 2001). With respect to protein, human milk contains a high ratio of whey to casein, which is easily digestible. Non-lactose carbohydrate has been shown to play a role in an infant's ability to resist infections, and fatty acids are essential for brain development. A number of studies have shown that breastfed infants gain weight rapidly during the first 2-3 months of life, followed by a relatively slower growth rate compared to formula-fed infants. Studies showed that breastfed infants self regulate their

energy requirement (Dewey, 2001a) by maintaining a lower body temperature and metabolic rate than formula-fed infants (Dewey, 2001a; Eckhardt et al, 2001).

Studies have also shown that breast milk promote immunogical benefits and reduced infant morbidity. A dose-response relationship appears to exist between breastfeeding and infant immune function. For example, the more breast milk that an infant receives during the first six months of infancy, the less likely the infant is to develop health problems including diarrhea and ear infections (Scariati, et al; 1997). Breastfeeding is superior to infant formula feeding because breast milk not only meets the nutritional requirements of the infant but also protects against infections through its defense factors such as secretory immunoglobulin A (IgA), lactoferrin, lysozyme, anti-inflammatory factors, cytokines, nucleotides, macrophages, and lymphocytes (Oddy, 2001). Hence, human milk enhances the infant's immune system (Heinig & Dewey, 1996). Studies have shown that infants who are exclusively breastfed have fewer gastrointestinal infections due to the "bifidogenic activity" of the human milk protein (Liepke, et al; 2002; Wright, et al; 1998). When rates of respiratory and gastrointestinal illnesses were compared in 776 breastfed and bottle-fed infants, it was observed that infants who were fed human milk substitutes had "five-fold more gastrointestinal illnesses, three-fold more respiratory illnesses and double the episodes of otitis media" (Beaudry, et al; 1995). Infants who were breastfed for 13 weeks or more had significantly fewer gastrointestinal illnesses during the first year of life compared to bottle-fed infants. In addition, there was a decreased incidence, severity, and duration of diarrhea in breastfed infants (Bocar, 1997). A two-fold increase in illnesses including diarrhea was observed among formula-fed infants compared to infants who were breastfed for at least 12 months (Heinig & Dewey, 1996). In a study of 430 breastfed infants, there was only one hospital admission due to respiratory illness compared to 51 admissions in 346 bottle-fed infants; authors of this study concluded that breastfeeding prevented hospitalizations for respiratory illnesses (Beaudry, et al; 1995).

Research showed that infants who were breastfed and given pre-lacteal feedings (colostrums) had fewer episodes of diarrhea (Ziyane, 1999). Studies confirming the relationship between breastfeeding and other childhood illnesses indicate that breastfeeding protects infants against infectious diseases including bacteraemia, meningitis, infant botulism, and urinary tract infections (Heinig & Dewey,1996). Breastfeeding has also been shown to protect against chronic illnesses including insulin-dependent diabetes mellitus, Crohn's disease, ulcerative colitis, childhood cancers such as lymphoma (Heinig & Dewey, 1996), and sudden infant death syndrome (Dennis,2002b). In a study conducted with 582 caregivers, it was observed that 45.9% of the infants were breastfed for at least one year; further examination showed that a decrease in breastfeeding was associated with increased episodes of diarrhea (McLennan, 2000).

2.8 Basic Nutritional needs of Infants

The full-term newborn needs approximately 100 to 110 Kcal (45 to 50 Kcal/kg) of body weight each day. Breast and formulas used for the normal newborn contain 20 kcal (Blackburn, 2007; Rosenberg, 2007). During the early days after birth, infants may lose up to 10% of their birth weight because of normal loss of extracellular water and the consumption of fewer calories than needed (Green, 2008). Newborns may fall asleep before feeding adequately and have a small stomach capacity at birth. Capacity increases rapidly so that many infants take 60 to 90ml by the end of the first week. Infants usually regain the lost weight by 2 weeks of age (Feigelman, 2007). Infants should be evaluated for feeding problems if weight loss exceeds 7% to 8%, if loss continues beyond 3 days of age, or if the birth weight is not regained by 2 weeks of age in the full term infant, AAP and American College of Obstetricians and Gynecologist (ACOG), 2007; Stellwagen & Bois, 2006). The calories needed by the newborn are provided by carbohydrates, proteins and fat in breast milk or formula. Full term neonates digest simple carbohydrates and proteins well. Fats are less

well digested because the lack of pancreatic lipase in the breast milk and formula (Mckinney et al; 2009). Because newborns lose water easily from the skin, kidneys and intestines, they must have adequate fluid intake each day. The normal newborn needs approximately 40 to 60ml/kg (18 to 27ml/kg) a day by the end of the first week (DeMarini & Roth, 2007). Breast milk or formula supplies the infants fluid needs. Additional water is unnecessary (Mckinney, et al; 2009).

Protein

The concentrations of amino acids in breast milk are suited to the infant's needs and ability to metabolize them. Breast milk is high in taurine, which is important for bile conjugation and brain development. Breast milk is low in tyrosine and phynlalanine, corresponding to the infant's low levels of enzymes to digest them. The protein produced a low solute load for the infant's immature kidneys (Franklin & Figueroa, 2006). Casein (a by-product of butter manufactured) and whey (a by-product of cheese manufactured) are the proteins in milk. Casein forms a large insoluble curd that is harder to digest than the curd from whey, which is very soft. Breast milk is easily digested because it has a high ratio of whey to casein. Commercial formulas must be adapted to increase the amount of whey so that the curd is more digestible (Mckinney, *el al;* 2009). Many infants fed cow's milk-based formulas develop allergies to the protein in the milk. Because breast milk is made for the human infant, it is unlikely to cause allergies. Infants with a family history of allergies are less likely to develop them if they are breastfed (Lawrence & Lawrence, 2005). Although breast milk does not cause allergies, allergenic foods the mother has eaten may pass to her milk. If the infant reacts to the mother's diet, the offending food should be identified and eliminated (Mckinney, *et al;* 2009).

Carbohydrate

Lactose is the major carbohydrate in breast milk. It improves absorption of calcium and provides energy from brain growth. Other carbohydrates in breast milk increase intestinal acidity and impede growth of pathogens (Rioden, 2005).

Fat

For infants to acquire adequate calories from the limited amount of human milk or formula they are able to consume, at least 15% of the calories provided must come from fat (tryglycerides). The fat must be easily digestible. Fat in human milk is easier to digest and absorb than that in cow milk because of the arrangement of the fatty acids on the glycerol molecule and because of the presence of the enzyme lipase (Wong, *et al;* 2002). The researchers, further stated that cow milk is used in most infant formulas, but the milk fat is removed and replaced by another fat source, such as corn oil that can be digested and absorbed by the infant. If whole milk or evaporated milk without added carbohydrate is fed to infants, the resulting fecal loss of fat (and therefore loss of energy) may be excessive because the milk moves through the infant's intestines too quickly for adequate absorption to take place. This can lead to poor weight gain. In addition to its energy contributions, fat also furnishes essential fatty acids (EFA) which are required for growth and tissue maintenance. EFAs are components of cell membranes and precursors of some hormones. Inadequate intake of EFAs results in eczema and growth failure. The lack of EFAs in skin and low fat milk is another reason infants should not be fed these products (Wong, *et al; 2002).*

Vitamins

Human milk contains all the vitamins required for infant nutrition, with individual variations based on maternal diet and genetic differences vitamins are added to cow's milk formulas to approximate the levels in breast milk. While cow's milk contains adequate amounts of vitamin A and vitamin B complex, vitamin C (ascorbic acid) and vitamin E must

be added (Wong, *et al;* 2002). Vitamin A, E and C are high in breast milk. The vitamin D content of breast milk is low, and supplementation is recommended by 2 weeks of age (APP, 2005a; Kleinman, 2004). According to Wong, *et al;* (2002), human milk may be somewhat deficient in vitamin D, supplementation may not be necessary, provided that the infant is exposed to sunlight for 30 minutes per week wearing only a diaper or for 2 hours per week fully clothed but without a hat. To prevent rickets, supplementation may be recommended for preterm infants and for dark-skinned infants whose mothers eat vegetarian diets that exclude meat, fish and dairy products. Vitamin K is also essential, for the synthesis of blood clotting factors. It is present in human milk and absorbed efficiently. Because it is fat soluble, it is present in greater concentrations in colostrums and in the high fat hind milk (Kries, *et al;* 1987), although the increased volume of milk as lactation progresses means that the infant obtains twice as much vitamin K from mature milk as he does from colostrums (Canfield, *et al;* 1991). Water-soluble vitamins, unless the mother's diet is seriously deficient, breast milk will contain adequate levels of all the vitamins. Since most vitamins are fairly widely distributed in foods, a diet significantly deficient in one vitamin will be deficient in others as well. Thus an improved diet will be more beneficial than artificial supplements. With some vitamins, particularly vitamin C, a plateau may be reached where increased maternal intake has no further impact on breast milk composition (Fraser & Cooper, 2003)

Minerals

The casein-protein in cow's milk interferes with iron absorption. Although iron in breast milk is lower than in formula, it is absorbed five times as well and breastfed infants are rarely deficient in iron (Riordan, 2005). The full term infant who is breastfed exclusively maintain iron stores for the first 6 months of life (Lawrence & Lawrence, 2005). Generally, iron is added when the infant begins solids at 6 months. Preterm infants need iron supplements earlier. All formula-fed infants should receive formula fortified with iron (APP

& ACOG, 2007). Sodium, calcium and phosphorus are higher in cow's milk than in human milk. This difference could cause an excessively high renal solute load if formula is not diluted properly (Mckinney, *et al;* 2009). According to AAP (1997), the fluoride levels in human milk and in commercial formulas are low. This mineral which is important in the prevention of dental caries, may cause spotting of the permanent teeth (Fluorosis) in excess amounts. It is recommended that a fluoride supplement be given only to those infants not receiving fluoridated water after 6 months of age.

Fluids

The fluid requirement for normal infants is about 80 to 100ml of water per kilogram of body weight per 24 hours (Behrman, Kliegman, & Arvin, 1996). In general, neither breastfed nor formula fed infants need to be fed water, not even those living in very hot climates. Breast milk contains 87% water, which easily meets fluid requirements Feeding water to infants may only decrease caloric consumption at a time when infants are growing rapidly (Wong, *el al;* 2002). Furthermore infants have room for little fluctuation in fluid balance and should be monitored closely for fluid intake and water loss. Infants lose water through excretion of urine and through insensible losses such as respiration. Under normal circumstances, infants are born with some fluid reserve, and some of the weight loss during the first few days is related to loss of this fluid.

Enzymes

Breast milk contains enzymes that aid in digestion. Pancreatic amylase, necessary to digest carbohydrates is low in the newborn, but present in breast milk. Breast milk also contains lipase to increase fat digestion (Mckmney, *et al;* 2009).

Anti-infection factors

Leucocytes: During the first 10 days there are more white cells per milliliter in breast milk than there are in blood. Macrophages and neutrophils are amongst the most common

leucocytes in human milk and they surround and destroy harmful bacteria by their phagocytic activity (Fraser & Cooper, 2003).

Immunoglobulin's: Five types of immunoglobulin have been identified in human milk: IgA, IgG, IgE, IgM and IgD. Of these, the most important is IgA which appears to be both synthesized and stored in the breast. Although some IgA is absorbed by the infant, much of it is not. Instead it 'paints' the intestinal epithelium and protects the mucosal surfaces against entry of pathogenic bacteria and enteroviruses. It affords protection against Escherichia coli, pneumococci, poliovirus and the rotaviruses (Fraser & Cooper, 2003).

Lysozyme: this binds to enteric iron, thus preventing potentially pathogenic E coli from obtaining the iron they need for survival. It also has antiviral activity (against HIV, CMV and HSV), by interfering with virus absorption or penetration or both (Fraser & Cooper, 2003).

Bifidus factor: The bifidus factor in human milk promotes the growth of Gram bacilli in the gut flora, particularly lactobacillus bifidus, which discourages the multiplication of pathogens (Babies who are fed on cow's milk - based formulae have more potentially pathogenic bacilli in their gut flora) (Fraser & Cooper, 2003)

Hormones and growth factor: Epidermal growth factor and insulin-like growth factor are among the most fully studied of the growth factors and regularly peptides found in breast milk and colostrums. They stimulate the baby's digestive tract to mature more quickly and strengthen the barrier properties of the gastro intestinal epithelium. Once the initially leaky membrane living in the gut matures, it is less likely to allow the passage of large molecules, and becomes less vulnerable to microorganisms. The timing of the first feed also has a significant effect on gut permeability, which drops markedly if the first feed takes place soon after birth (Fraser & Cooper, 2003).

2.9 Summary

The benefits of breastfeeding for mothers and infants have been widely recognized and researched. Studies have shown that breastfeeding is superior to infant formula feeding because of its protective properties against illness, in addition to its nutritional advantages. Considering the extensive benefits of breastfeeding, the World Health Organization, United Nations Children Fund and the American Dietetic Association recommend exclusive breastfeeding of infants for the first six months and continued breastfeeding with complementary foods up to 24 months of age. Despite widespread efforts to encourage breastfeeding, the rates in Nigeria have remained low. Many demographic factors such as maternal age, education, socioeconomic status, cultural factors, and social support have been shown to potentially influence a woman's decision to breastfeed. Along with a number of demographic factors, poor or negative attitudes toward breastfeeding have been shown to be barriers to initiating and sustaining breastfeeding. Previous studies have shown that mothers who do not breastfeed or individuals who do not support breastfeeding have negative attitudes towards breastfeeding. Because the decision to breastfeed is often made long before a woman becomes pregnant, breastfeeding promotion programs should focus on educating women during their antenatal classes. In order to facilitate positive attitudinal changes in individuals, health care professionals with adequate knowledge and positive attitudes about breastfeeding are critical. Health Educators who received nutrition education, including optimum infant feeding methods, are considered advocates of breastfeeding.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

The purpose of this study was to examine demographic determinants of exclusive and non-exclusive breastfeeding among nursing mothers in Benue State. The study was conducted to specifically assess the influence of mother's age, education, occupation, income and family/friends views in the practice of exclusive and non-exclusive breastfeeding of infants. To achieve this purpose, the research design, population, sample and sampling technique, instrumentation, validation, administration of the instrument, and statistical techniques used in this study are described below.

3.1 Research Design

Ex-post-facto research design was considered suitable for this study since there was no manipulation of information from the respondents. Razaq, & Ajayi, (2000), explained that ex-post-facto is undertaken after the events have taken place and the data are already in existence. In ex-post-facto research design it is difficult to manipulate independent (mother's age, education, occupation, level of income, and family/friends views) variables because data are already in existence.

3.2 Population

The population of this study comprised all nursing mothers with infants who are exclusively and non- exclusively breastfed, attending any one of the public and private hospitals in Benue State. The population was estimated at 5600 (Benue State Ministry of Health, 2012).

3.3 Sample and Sampling Techniques

Benue State was divided into three already existing senatorial zones (A, B & C). The state has 79 privately owned hospitals, 23 State Government owned hospitals, one Federal

medical centre and one University Teaching Hospital as at the time this study was conducted. Zone A had 7 State Government Owned Hospitals, while zone B and C had 7 and 9 respectively. Each local government area had a state government owned hospital. The state government owned hospitals were, therefore, stratified into three strata according to their existing senatorial zones.

A simple random sampling was employed to select one state government owned hospital each from the three senatorial zones. To ensure equal chance of being selected for the study, numbers were assigned to each of the 23 state Government owned hospitals. Thereafter, the assigned numbers were written on pieces of papers, folded and dropped into three different containers according to their respective zones. The researcher then asked one of his research assistants to dip his hand into a container and pick out a number. The number picked was written down, until three (3) hospitals (Adikpo, Gboko, and Otukpo General Hospitals) were picked from each of the containers, to represent the three senatorial zones. The 79 privately owned hospitals were selected using systematic sampling techniques since the privately owned hospitals were not evenly distributed across the three senatorial zones. To avoid been bias, the first hospital was randomly selected. This was done by choosing a number between 1 and 13 randomly as a starting point and then count down, selecting every 13^{th} hospital until 6 hospitals were selected to represent the privately owned hospitals in the State, viz; Unity Hospital Vandeikya, St. Monica's Hospital Adikpo, Madonna Hospital Makurdi, Mayo Hospital Asa, Bishop Murray Medical Centre Makurdi, Ameh Hospital Ogbadibo. The choice of numbers 1 and 13 was to enable the researcher select 6 hospitals evenly without bias. Federal Medical Centre, Makurdi, was however, purposively selected since it was the only Federal Hospital in the State. Consequently, a total of ten (10) hospitals were selected and used in the study.

Nursing mothers of infants aged 4-24 months, visiting the ten randomly selected hospitals were purposively selected for the study. The following selection criteria were used for participation:

1. Mothers who are breastfeeding currently
2. Mothers having infants/ children between 4-24 months.

Infants aged 4 months to 24 months were considered suitable for this study in order to ascertain whether the mother practices exclusive or non-exclusive breastfeeding preceding the study. This was in agreement with the study done by Ekele & Hamidu, (1997), that babies whose age peaked at 4-6 months were said to have been either exclusively or non-exclusively breastfed. Infants whose age peaked at 24 months were also considered because they were still attending postnatal clinics and it is the age the infant is expected to be weaned from breast milk as recommended by WHO (2004). Such nursing mothers provided information based on their history of feeding methods preceeding the study. Out of a total of 5600 nursing mothers who attended post-natal clinics in Benue State, 500 were selected purposively and used as sample size for this study. All nursing mothers who agreed to participate and also possess the above mentioned criteria, were served with a copy of the questionnaire. 455 questionnaires were duely completed and returned, out of which 380 exclusively breastfed, while only 75 mothers practiced non-exclusive breastfeeding preceding the study.

After obtaining the informed verbal consent, the mothers were visited at the respective post-natal clinics and the questionnaire was administered to the nursing mothers for completion.

3.4 Research Instrument

Data was collected using structured and self-developed questionnaire and some items of the questionnaire were adopted from similar studies such as Adamu, (2002), Salami, (2006), Mundi, (2008), Nigeria Demographic and Health Survey (NDHS), (2008), and

Awogbenja, (2010). The questionnaire consisted of three sections, A, B, and C with a total of 17 items. Section A consists of four (4) items on demographic characteristics of nursing mothers. Section B consists of five (5) items on opinions of mothers on methods of breastfeeding. Section C contains eight (8) items on feeding patterns by nursing mothers.

3.5 Validation

To ascertain the face and content validity of the questionnaire, the prepared questionnaire was distributed to four experts within and outside the Department of Physical and Health Education, Ahmadu Bello University Zaria. They served as jurors for vetting and ascertaining the face and content validity of the instrument. The corrections were implemented and a final questionnaire was produced and used for data collection.

3.6 Administration of Instrument

Before the questionnaire was distributed, eligible mothers were given explanations concerning the study and how the questionnaire was to be filled by the respondents, and upon verbal consent to participate. The questionnaire was distributed by the researcher, two trained research assistants and three trained nurses on duty. A total of 500 questionnaire was administered, out of which 455 were duely completed and returned to the researcher. The researcher with his two research assistants, visited each of the randomly selected hospital on a scheduled date. At the hospitals visited, 40-50 questionnaire was administered to each of the clinics, for completion by the nursing mothers after clinic hours, and were retrieved the same day by the researcher and his assistants after completion. Instructions were given on how to complete the questionnaire. Upon completion, the researcher used a total of 455 questionnaire for statistical analyses.

3.7 Statistical Techniques

As the primary purpose of this study was to assess the influence of demographic determinants of exclusive and non-exclusive breastfeeding among nursing mothers,

descriptive statistics of and inferential statistics were used. In descriptive statisticst, frequencies and percentages and cross tabulation statistics were used to answer the research questions. A non-parametric statistics of chi-square was employed to test the formulated research hypotheses.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.0 Introduction

The aim of this study was to examine the demographic determinants of exclusive and non-exclusive breastfeeding among nursing mothers in Benue State. To this end, 10 hospitals were randomly selected using multi stage sampling technique. 500 close-ended questionnaire were distributed to nursing mothers. Out of which 455 were retrieved and analysed. Chi-square statistics was used to test the hypotheses formulated for the purpose of this study. To achieve this purpose, the data collected was statistically analysed, the results of which are presented and discussed in this chapter.

4.1. Results

Table 4.1.1 Distribution of Respondents According to their Demographic Characteristics

Category	Characteristics	Freq	%
Exclusively breastfed	**Age**		
	15-19	27	7.1
	20-24	84	22.1
	25-29s	175	46.1
	30-34	60	15.8
	35 and above	34	8.9
	Total	380	100
Non-Exclusively breastfed	15-19	11	14.7
	20-24	21	28
	25-29	23	30.6
	30-34	20	26.7
	35 and above	0	0
	Total	75	100
Exclusively Breastfed	**Education**		
	Primary	90	23.7
	Secondary	179	47.1
	Tertiary	93	24.5
	No education	18	4.7
	Total	380	100
Non-Exclusively Breastfed	Primary	11	14.7
	Secondary	56	74.7
	Tertiary	3	4
	No education	5	6.6
	Total	75	100
Exclusively Breastfed	**Occupation**		
	Fulltime housewife	120	31.6
	Civil servant	85	22.4
	Trader	85	22.4
	Farmer	90	23.6
	Total	380	100
Non-Exclusively Breastfed	Fulltime housewife	15	20
	Civil servant	12	16
	Trader	36	48
	Farmer	12	16
	Total	75	100
Exclusively Breastfed	**Income**		
	Below 5000	30	7.9
	5000-10,000	33	15.8
	10,000-20,000.	60	8.7
	20,000-30,000	21	5.5
	30,000 and above	38	10
	No salary	198	52.1
	Total	380	100
Non-exclusively Breastfed	Below 5000	15	20
	5000-10,000	12	16
	10,000-20,000	8	10.7
	20,000-30,000	7	9.3
	30,000 and above	10	13.3
	No salary	23	30.7
	Total	75	100

Observation of Table 4.1.1 indicates that majority (346; 91.1%) of nursing mothers who exclusively breastfed their babies were below 34years, while a total of 75 (100%) nursing mothers that practiced non-exclusive breastfeeding were within the same age range of below 34years old. The Table further reveals that most (362; 95.2%) of the exclusively breastfeeding mothers were educated and only few (4.7%) of them had no formal education. A closer look at the Table above, however, shows that more than half (269;70.8%) of those educated had not gone beyond secondary education level. However, few (18;4.5%) of the nursing mothes who practiced exclusive breastfeeding had post secondary education. Whereas, on the other hand, a total of 75 (16.5%) nursing mothers, practiced non-exclusive breastfeeding, had either primary, (11;14.7%), secondary (56;74.7%), or tertiary education (3;4%). Only few (5;6.7%) never went to school.

Careful observation of Table 4.11, further reveals that farming (90;23.7%), civil service (85;22.4%) and trading (85;22.4%) were the major occupation of mothers who practiced exclusive breastfeeding. However, many (120;31.6%) of the EBF mothers were fulltime housewives. Whereas, the non-exclusive breastfeeding mothers engaged mostly in either trading (36;48%), farming (12;16%), and civil service(12;16%) respectively. Some (15;20%) of them, however, stayed at home as fulltime housewives.

Income level of nursing mothers was associated with EBF and non-EBF as shown in Table 4.1.1. The Table reveals that (182; 47.9%) of nursing mothers earn salaries of between #5000-30,000 monthly whereas, (27; 69.3%) of non-exclusively breastfeeding mothers also earn the same salary range. Many (198;52.1%), exclusively breastfeeding mothers, and non-exclusively breastfeeding mothers (23;30.7%) did not earn salaries and depended solely on their husbands to provide food as means of replenishing breast milk of nursing mothers.

Table 4.1.2 Distribution of Responses According to the Reasons for Breastfeeding Exclusively

Reason	Frequency	Percentage
My husband believes breastfeeding makes baby look sound and healthy.	154	33.8
Grandmother believes breastfeeding makes baby grow faster.	75	17.4
My mother believes that breastfeeding brings me closer to my baby.	11	2.4
My friend believes that breastfeeding makes baby grow safe and independent as a child.	29	6.4
My sister-in-law believes breastfeeding makes baby to be more secured.	6	1.3
My grandmother believes breastfeeding will give me a sense of duty to my baby.	13	2.9
My sister believes breastfeeding makes baby to be intelligent when he /she up.	88	19.3
Total	455	100.0

Examination of Table 4.1.2 reveals that out of 380 respondents that practiced exclusive breastfeeding, majority (154;33.8%) did so because their husbands believed that exclusive breastfeeding makes baby look sound and healthy, while (88;19.3%) others initiated and sustained EBF because their sisters believed that breastfeeding makes babies to be intelligent when they grow up. Nevertheless, (79;17.4%) the respondents had practiced exclusive breastfeeding because their grandmothers believed breastfeeding makes baby grow faster, while few (29;6.4%) of the nursing mothers did so because their friends believed that breastfeeding makes baby grow safe and independent as a child. Some nursing mothers (13;2.9%) initiated and sustained EBF because, grandmothers believes breastfeeding gives the nursing mother a sense of duty to the baby. However, other (11;2.4%) nursing mothers decided to exclusively breastfeed according to grandmother's belief, and who observed that exclusive breastfeeding practice strengthens mother and baby's relationship (bond). A few

number (6;1.3%) of them practiced exclusive breastfeeding because their sister-in-laws believed it was an effective way of securing the baby.

Table 4.1.3 Distribution of Responses by Reasons for not Practicing Exclusive Breastfeeding

Reasons for not practicing exclusive breastfeeding	Frequency	Percent
Husband feels he does not get the desired attention from me.	2	2.7
Mother-in-law feels breast milk alone is not enough for the first six months.	21	28
I was not fed with breast milk by my own mother, so she advice that I should not give breast milk only.	2	2.7
My family believes that water is life and must be given to the baby before six months.	37	49.3
The size of my breast is small and cannot produce enough milk.	1	1.3
My husband believes breasts are sex objects and should be used only in that context.	3	4
My husband feels embarrassed when I am breastfeeding publicly	5	6.7
Total	75	100.0

Examination of Table 4.1.3 shows that most (37;49.3%) nursing mothers negated the practice of EBF because their family members believed water is life and must be given to the infant before six months of age. The erroneous belief by grandmother (21;28%) that breast milk was not enough, caused the mother to give other supplements in addition to breast milk. Also for the fact that husbands disapproved (5;6.7%) of EBF due to a feeling of embarrassment, made the woman to practice EBF. The husbands (3;4%) viewed breasts only in the sexual context, caused the mother to discontinue EBF. A few nursing mothers (2;2.7%) who were not fed on breast milk alone by their own mothers stopped EBF under the influence of the grandmother that EBF was not in their family history. Only one (1;1.3%) nursing mother felt that her breasts were too small and cannot produced enough milk for baby's growth and development.

Table 4.2. Cross Tabulation Analysis of the Influence of Mother's Age and the Practice of Exclusive and Non exclusive Breastfeeding

Age Range * Do you breastfeed exclusively? Cross tabulation					
	Age Range		Do you breastfeed exclusively?		
S/N			Yes	No	Total
	15-19 yrs	Count	27	11	38
		% within age range	71.1%	28.9%	100.0%
		% within do you breastfeed exclusively?	7.1%	14.7%	8.4%
	20-24 yrs	Count	84	21	105
		% within age range	80.0%	20.0%	100.0%
		% within do you breastfeed exclusively?	22.1%	28.0%	23.1%
	25-29 yrs	Count	175	23	198
		% within age range	88.4%	11.6%	100.0%
		% within do you breastfeed exclusively?	46.1%	30.7%	43.5%
	30-34 yrs	Count	60	20	80
		% within age range	75.0%	25.0%	100.0%
		% within do you breastfeed exclusively?	15.8%	26.7%	17.6%
	35 yrs and above	Count	34	0	34
		% within age range	100.0%	.0%	100.0%
		% within do you breastfeed exclusively?	8.9%	.0%	7.5%
Total		Count	380	75	455
		% within age range	83.5%	16.5%	100.0%
		% within do you breastfeed exclusively?	100.0%	100.0%	100.0%

Observation of Table 4.2 reveals that exclusive breastfeeding was associated with older nursing mothers compared to their counterparts who were much younger. Relatively, exclusive breastfeeding was highest (100%) among nursing mothers within the age range of 35 years and above, 88.4% within 25-29 years, 80% within 20-24 years of nursing mothers

and 75% for mothers within 30-34 years compared to the much younger ones (71.1%) within the age range of 15-19 years. By implication, the above Table indicates association of exclusive breastfeeding with higher maternal age. This can be attributed to the fact that older nursing mothers had more experiences in childbearing and had understanding of the importance of exclusive breastfeeding in enhancing the health of their babies.

Table 4.2.1 Cross Tabulation Analysis of the Influence of Mother's Level of Education and the Practice of Exclusive and Non exclusive Breastfeeding of Her Baby

			Educational level of nursing mothers				
			primary	Secondary	tertiary	did not attend school	Total
do you breastfeed exclusively?	Yes	Count	90	179	93	18	380
		% within do you breastfeed exclusively?	23.7%	47.1%	24.5%	4.7%	100.0%
		% within Educational level of nursing mothers	89.1%	76.2%	96.9%	78.3%	83.5%
	No	Count	11	56	3	5	75
		% within do you breastfeed exclusively?	14.7%	74.7%	4.0%	6.7%	100.0%
		% within Educational level of nursing mothers	10.9%	23.8%	3.1%	21.7%	16.5%
Total		Count	101	235	96	23	455
		% within do you breastfeed exclusively?	22.2%	51.6%	21.1%	5.1%	100.0%
		% within Educational level of nursing mothers	100.0%	100.0%	100.0%	100.0%	100.0%

A look at Table 4.2.1 shows that a total of 101(22.2%) nursing mothers who had primary education, 90;23.7% exclusively breastfed their babies, while (11;14.7%) did not practice exclusive breastfeeding. Majority (235;51.6%) of the respondents attended secondary school, out of which 179(47.1%) exclusively breastfed, while some (56;74.7%) of them practiced non-exclusive breastfeeding. A further look at the Table, reveals that out of 96

nursing mothers who attended tertiary institutions, majority (93;24.5%) of them practiced exclusive breastfeeding, and only a few (3;4.0%) practiced non-exclusive breastfeeding. The Table further reveals that some (23;5.1%) nursing mothers never attended school, however, 18(4.7%) of them exclusively breastfed their babies.

A closer observation of Table 4.2.1 reveals that exclusive breastfeeding was highest among tertiary educated mothers. This is attributed to the fact that tertiary educated mothers probably understood the benefits and importance of EBF better. Those who had poor exclusive breastfeeding practices were those who never attended school. This could be attributed to the fact that these women had poor knowledge of the importance of exclusive breastfeeding and discontinued exclusive breastfeeding and thereby introduced other supplements to complement breastfeeding.

Table 4.2.2 Cross Tabulation Analysis of the Influence of Mother's Occupation and the Practice of Exclusive and Non exclusive Breastfeeding of Her Baby

			Occupation				
			full time house wife	civil servant	trader	farmer	Total
do you breastfeed exclusively?	Yes	Count	120	85	85	90	380
		% within do you breastfeed exclusively?	31.6%	22.4%	22.4%	23.7%	100.0%
		% within occupation	88.9%	87.6%	70.2%	88.2%	83.5%
	No	Count	15	12	36	12	75
		% within do you breastfeed exclusively?	20.0%	16.0%	48.0%	16.0%	100.0%
		% within occupation	11.1%	12.4%	29.8%	11.8%	16.5%
Total		Count	135	97	121	102	455
		% within do you breastfeed exclusively?	29.7%	21.3%	26.6%	22.4%	100.0%
		% within occupation	100.0%	100.0%	100.0%	100.0%	100.0%

An examination of Table 4.2.2 shows that mothers who were fulltime housewives (135;29.7%) exclusively breastfed, while a few nursing mothers 15(20.0%) practiced non-

exclusive breastfeeding. Out of a total of 97(21.3%) civil servants, 85(22.4%) practiced exclusive breastfeeding, while 12(6.0%) practiced non-exclusive breastfeeding. Furthermore, out of 121(26.6%) traders, 85(22.4%) practiced exclusive breastfeeding, while 36(48.0%) practice non-exclusive breastfeeding. A total of 102(22.4%) farmers on the other hand, practiced exclusive and non-exclusive breastfeeding, out of which 90(23.7%) practice exclusive breastfeeding, while 12(16.0%) practiced non-exclusive breastfeeding.

Therefore, a closer look at Table 4.2.2 shows that exclusive breastfeeding was highest among fulltime housewives. Suggesting that, the fulltime housewives had enough time to breastfeed more conveniently than their counterparts who were fulltime workers outside their homes. This explains to the fact that combination of farming and care of the baby may not be as demanding as the other occupations may suggest. Civil servants also took time to exclusively breastfeed their infants. Poor exclusive breatfeeding was, however, noticed among the traders. This may be due to the fact that traders may not have the convenience to exclusively breastfeed as customers interference might have caused the mother to halt breastfeeding in order to make transactions. Nevertheless, public breastfeeding may be embarrassing to the mother's especially the younger mothers, or sometimes even to the husbands, thereby making the mother to discontinue exclusive breastfeeding.

Table 4.2.3. Cross Tabulation Analysis of the Influence of Mother's Level of Income and the Practice of Exclusive and Non-Exclusive Breastfeeding of Her Baby

			monthly income						
			Below N5000	N5000 - N10,000	N10,000 - N20,000	N20,000 - N30,000	N30,000 and above	no salary	Total
do you breastfeed exclusively?	Yes	Count	30	60	33	21	38	198	380
		% within do you breastfeed exclusively?	7.9%	15.8%	8.7%	5.5%	10.0%	52.1%	100.0%
		% within monthly income	66.7%	83.3%	80.5%	75.0%	79.2%	89.6%	83.5%
	No	Count	15	12	8	7	10	23	75
		% within do you breastfeed exclusively?	20.0%	16.0%	10.7%	9.3%	13.3%	30.7%	100.0%
		% within monthly income	33.3%	16.7%	19.5%	25.0%	20.8%	10.4%	16.5%
Total		Count	45	72	41	28	48	221	455
		% within do you breastfeed exclusively?	9.9%	15.8%	9.0%	6.2%	10.5%	48.6%	100.0%
		% within monthly income	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Results of Table 4.2.3 reveals that out of the total of 45(9.9%) nursing mothers that received less than 5000 naira a month, 30(7.9%) practiced exclusive breastfeeding, while 15(20.0%) of the same income earning status practiced non-exclusive breastfeeding. Mothers (72;15.8%) who earned about 5000-10,000 per month, 60(15.8%) practiced exclusive breastfeeding, while (12;16.7%) practiced non-exclusive breastfeeding. Table 4.2 further reveals that a total of 41(9%) nursing mothers earned from 10,000-20,000 naira per month and quite number of them (33;8.7%) practiced exclusive breastfeeding while 8(10.7%) did not practice exclusive breastfeeding. Furthermore, income earners of 20,000-30,000 naira,

(28;6.2%) breastfeed their babies, out of which (21;5.5%) practiced exclusive breastfeeding within monthly income of 75.0%, while (7;9.3%) within monthly income of 25% did not practice exclusive breastfeeding. Those who earn higher above 30,000, (48;10.5%) also breastfeed their babies, out of which (38;10.0%) exclusively breastfeed within monthly income of 79.2%. While (10;13.3%) within monthly income of 20.8% practiced non-exclusive breastfeeding. Out of a total of (221;48.6%) non salary earners, 198;52.1% exclusively breastfed within monthly income of 89.6%, while (23;30.7%) failed to practice exclusive breastfeeding within monthly income of 10.4%.

A careful look at the Table 4.2.3 shows that EBF was highest among the non salary earners. Which preclude to the fact that, these women probably had no money to buy supplements to complement breastfeeding, and so, resorted to breastfeed exclusively. Salary earners of 5000-10,000 also practiced high exclusive breastfeeding. Poor EBF practices, were however, observed among income earners of less than 5000. This was because these mothers had no enough money to buy foods to replenish their body in order to have enough energy to breastfeed exclusively, so they were boredom and gave up exclusive breastfeeding.

Sub-Hypotheses Testing

Five sub-hypotheses were postulated for this study. These were tested using Chi-Square statistical analysis.

Sub-Hypothesis

1.1 Mother's age will not significantly influence the practice of exclusive and non-exclusive breastfeeding

1.2 Mother's level of education will not significantly influence the practice of exclusive and non-exclusive breastfeeding

1.3 Mother's occupation will not significantly influence the practice of exclusive and non-exclusive breastfeeding

1.4 Mother's level of income will not significantly influence the practice of exclusive and non-exclusive breastfeeding

1.5 Family views regarding breastfeeding will not significantly influence the practice of exclusive and non-exclusive breastfeeding.

Sub-Hypothesis One: Mother's age will not significantly influence the practice of exclusive and non-exclusive breastfeeding of babies.

Table 4.3.1 Chi-square Analysis of the influence of Mother's Age and the Practice of Exclusive and Non-exclusive Breastfeeding of Babies

Age range	Exclusive BF		Non EBF		Cumulative O & E		df	χ^2- cal.	*p*
	O	E	O	E	O	E			
15-19 yrs	27	76.0	11	18.8	38	91.0	4	195.868	.000
20-24 yrs	84	76.0	21	18.8	105	91.0			
25-29 yrs	175	76.0	23	18.8	198	91.0			
30-34 yrs	60	76.0	20	18.8	80	91.0			
>35 yrs	34	76.0	0	18.8	34	91.0			
Total	380		75		455				

χ^2 (4) = 9.488 $p \leq 0.05$

Careful observation of Table 4.3.1 shows significant positive relationship exist between mother's age and the practice of exclusive and non-exclusive breastfeeding, suggesting that the mother's age has influence on the practice of exclusive and non-exclusive breastfeeding. The result did not support the hypothesis which states that mother's age will not significantly influence the practice of exclusive and non-exclusive breastfeeding of babies. This is, because, the result of the chi-square shows that, the chi-square critical value 9.488 at alpha level of 0.05 with degree of freedom 4, is less than the chi-square calculated value 195.868, therefore, the null hypothesis is rejected, and conclude that mother's age significantly influence the practice of exclusive and non-exclusive breastfeeding (p = .000).

Sub-Hypothesis Two: Mother's level of education will not significantly influence the practice of exclusive and non-exclusive breastfeeding**.**

Tabke 4.3.2 Chi-square Analysis of Mother's level of education and the practice of exclusive and non-exclusive breastfeeding of her baby

Education	Exclusive BF		Non EBF		Cumulative O & E		Df	χ^2- cal.	*p*
	O	E	O	E	O	E			
primary	90	95.0	11	18.8	101	113.8	3	205.844	.000
secondary	179	95.0	56	18.8	235	113.8			
tertiary	93	95.0	03	18.8	96	113.8			
no school	18	95.0	05	18.8	23	113.8			
Total	380		75		455				

χ^2 (3) = 7.815 $p \leq 0.05$

Careful observation of Table 4.3.2 shows that significant positive relationship exist between mother's level of education and the practice of exclusive and non-exclusive breastfeeding of babies, suggesting that mother's level of education influence the practice of exclusive and non-exclusive breastfeeding of babies in Benue State. This is because, the chi-square analysis results, shows that 3 df = 7.815 table or critical value at 0.05 alpha level. Consequently the critical value 7.815 is less than the chi-square calculated value 205.844, therefore, the null hypothesis which states that mother's level of education will not influence the practice of exclusive and non-exclusive breastfeeding of babies is hereby rejected and the alternative hypothesis is retained (*p*=.000).

Sub-Hypothesis Three: Mother's occupation will not influence the practice of exclusive and non-exclusive breastfeeding**.**

Table 4.3.3 Chi-square Analysis of Mother's Occupation and the Practice of Exclusive and Non-exclusive Breastfeeding.

Occupation	Exclusive BF		Non EBF		Cumulative O & E		df	χ^2- cal.	*p*
	O	E	O	E	O	E			
house wife	120	95.0	15	18.8	135	113.8	3	8.112	.044
civil servant	85	95.0	12	18.8	97	113.8			
Trader	85	95.0	36	18.8	121	113.8			
Farmer	90	95.0	12	18.8	102	113.8			
Total	380		75		455				

χ^2 (3) = 7.815 $p \leq 0.05$

The result of the chi-square analysis in Table 4.3.3 shows that, significant positive relationship exist between mother's occupation and the practice of exclusive and non-exclusive breastfeeding, suggesting that the mother's occupation has influence on the practice of exclusive and non-exclusive breastfeeding. The result did not support the hypothesis which states that mother's occupation will not significantly influence the practice of exclusive and non-exclusive breastfeeding of baby. This is shown in the result of Table 4.3.3 which reveals that chi-square calculated value of 8.112 is greater than the chi-square critical value of 7.815 (3 df) at alpha level of 0.05. Since the calculated value is greater than the critical value, the null hypothesis is hereby rejected and the alternative hypothesis is retained. Therefore the researcher concludes that significant relationship exist between mother's occupation and the practice of exclusive and non-exclusive breastfeeding (*p*=.044).

Sub-Hypothesis Four: Mother's level of income will not significantly influence the practice of exclusive and non-exclusive breastfeeding**.**

Table 4.3.4 Chi-square Analysis of Mother's Level of Income and the Practice of Exclusive and Non-exclusive Breastfeeding

Monthly income	Exclusive BF		Non EBF		Cumulative O & E		df	χ^2- cal.	*p*
	O	E	O	E	O	E			
Below N5000	30	63.3	15	12.5	45	75.8	5	347.009	.000
N5000 - N10,000	60	63.3	12	12.5	72	75.8			
N10,000 - N20,000	33	63.3	08	12.5	41	75.8			
N20,000 - N30,000	21	63.3	07	12.5	28	75.8			
N30,000 and above	38	63.3	10	12.5	48	75.8			
no salary	198	63.3	23	12.5	221	75.8			
Total	380		75		455				

χ^2 (5) = 11.071 $p \leq 0.05$

A careful observation of the Table 4.3.4 reveals that significant positive relationship exist between mother's level of income and the practice of exclusive and non-exclusive breastfeeding of babies. The result therefore did not support the null hypothesis which states that mother's level of income will not significantly influence the practice of exclusive and non-exclusive breastfeeding of babies. This is revealed in the result of Table 4.3.4, which shows that the chi-square calculated value 347.009 at 0.05 alpha level and 5 df, is greater than the chi-square critical value of 11.071. Consequently, the null hypothesis which states that mother's level of income will not influence the practice of exclusive and non-exclusive breastfeeding is hereby rejected and the alternative hypothesis is retained (*p*=.000).

Sub-Hypothesis Five: Family views will not significantly influence the practice of exclusive and non-exclusive.

Table 4.3.5a Chi-square Analysis of Influence of Family views and the Practice of Exclusive Breastfeeding

	Observed N	Expected N	df	χ^2- cal.	*p*
Husband believes breastfeeding make baby look sound and healthy	154	56.9			
Grandmother believes breastfeeding make baby grow faster.	75	56.9			
My mother believes that breastfeeding brings me closer to my baby	11	56.9			
My friend believes that breastfeeding makes baby grows safe and independent as a child.	29	56.9	7	327.295	.000
My sister-in-inlaw believes breastfeeding makes baby to be more secured.	6	56.9			
My grandmother believes breastfeeding will give me a sense of duty to my baby.	13	56.9			
My sister believes breastfeeding makes baby to be intelligent when he/she grows up.	88	56.9			
Total	380				

χ^2 (7) = 14.067 $p \leq 0.05$

Table 4.3.5b Chi-square Analysis of Influence of Family views and the Practice of Non-Exclusive Breastfeeding

	Observed N	Expected N	df	χ^2- cal.	*p*
My husband feels he does not get the desired attention from me	2	65.0			
Grandmother/mother in-law feels breast milk alone is not enough for first six months	21	65.0			
I was not fed with breast milk by my own mother, so she advise that I should not give breast milk only to my baby	2	65.0	6	1720.246	.000
Family believes water is life, and must be given to baby before six months	37	65.0			
The size of my breast is small and cannot produce enough milk.	1	65.0			
My husband believes breasts are sex objects and should be used only in that context.	3	65.0			
My husband feels embarrassed when I am breastfeeding publicly	5	65.0			
Total	75				

χ^2 (6) = 12.59 $p \leq 0.05$

Details of the chi-square analysis in Table 4.3.5a and 4.3.5b shows that significant positive relationship exist between family/friends views and the practice of exclusive and non-exclusive breastfeeding of babies. The result therefore, did not support the null hypothesis which states that family views will not influence the practice of exclusive and non-exclusive breastfeeding of babies. This is shown in the result as revealed in the two Tables 4.3.5a and 4.3.5b that the chi-square critical value 14.067 and 12.592 are less than the chi-square calculated value of 327.295 and 1720.245 respectively, suggesting that significant influence exist between family/friends views and the practice of exclusive and non-exclusive breastfeeding. Thereby, rejecting the null hypothesis which states that family views will not influence the practice of exclusive and non-exclusive breastfeeding (p=.000).

4.2 Discussion

The results of this study showed high (99.8%) prevalence of breastfeeding among nursing mothers in Benue State, out of which 83.5% exclusively breastfeed up to six months which support the recommendation made by WHO and UNICEF (WHO/UNICEF, 2003). This can be said to be high when compared with previous studies which reported 97% breastfeeding, with only 13% exclusive breastfeeding rate (NDHS, 2008), which was much lower than the 20% exclusive breastfeeding rate reported by Salami (2006) and 24% by Ogunba (2006), 37.3% by Ukegbu et al (2011), and Ogunlesi 55.5% (2011). This high level of exclusive breastfeeding could be attributed to the fact that the respondents were influence on mother's choice of exclusive breastfeeding. This was observed in the present study, which indicated high (78%) influence of health workers through education of the nursing mothers during antenatal classes. This is in consonance with the study of Black et al (1990). The researchers noted that majority (74%) of nursing mothers that had knowledge of exclusive breastfeeding obtained their information from health workers. This may be due to attendance at ante-natal and post-natal clinics which were places where mothers were probably more exposed to current information and also educated on benefits of exclusive breastfeeding as well as on breastfeeding techniques. Black et al (1990), further emphasized the enormous role health workers play in shaping infant feeding practices of nursing mothers.

4.2.1 Influence of mother's Age and the Practice of Exclusive and Non-Exclusive Breastfeeding

The findings of this study revealed that mother's age significantly influenced (p = .000) the practice of exclusive and non-exclusive breastfeeding of babies. Exclusive breastfeeding was however, associated with older nursing mothers compared to their counterparts who were much younger. This is in agreement with the study carried out by Dennis, (2002b); Ertem et al, (2001); Scott & Binns, (1999); Wagner & Wagner, (1999). According to the researchers, older women (25years older) are more likely to initiate and continue breastfeeding compared to younger women. The findings of the present study

affirmed that EBF was highest among nursing mothers older than 25years. Nursing mothers <20years old had low (14.7%) practice of exclusive breastfeeding. This behaviour has been attributed to the fact that older nursing mothers had more experiences in childbearing and probably understood the place of exclusive breastfeeding of babies better. This is in agreement with the findings of Leffler, (2000), which stated that teenage mothers were not certain whether breastfeeding was beneficial to the nursing mother and the infant. These findings, further, appeared to be similar to the study conducted by Wambach & Cole, (2000) in which the researchers stated that only 9.1% of mothers younger than 20years of age continued to breastfeed up to six months. According to the researchers, a feeling of embarrassment for breastfeeding as a private behaviour, has been associated with younger nursing mothers willingness to breastfeed exclusively. These findings, further agree with the findings of Mundi (2008), according to which the researcher, mentioned that poor breastfeeding practices among (15-19years) teenage mothers could be attributed to the fact that infant feeding was tied intimately to micro structures of daily life including; the human body and its involvement in childbearing. Therefore, the fatigue experienced due to energy demands for nursing a baby, probably for the first time in addition to inexperience breastfeeding techniques may be rigorous and create a large demand on the time of a mother, thereby, reducing the time available for breastfeeding of the infant. A survey of 100 teenage mothers conducted by Leffler, (2000), also showed that 79% of teenage mothers intended to have children, only 52% planned to breastfeed. Embarrassment and increased fatique were perceived as barriers to breastfeeding among teenage girls. These teenage girls were also not certain whether breastfeeding was beneficial to the nursing mother. This result support similar findings done by Ekele & Hamidu, (1997), Mundi (2008), McKinney, et al; (2000), and Ukegbu, et al; (2011). According to these researchers, mother's age influenced the practice of exclusive or non-exclusive breastfeeding. Their findings showed that exclusive breastfeeding was highest among mothers within the age range of 20-34 years, compared

with their younger counterparts. The researchers concluded that teenage mothers considered breastfeeding to be unattractive for a woman and that, women within higher age range are fulltime housewives and may have more time to breastfeed. Also the fact that younger women have a college education where they receive supplemental nutrition programme for women, infants and children (WIC), caused the mother to discontinue exclusive breastfeeding. These findings are, however, in contrast with the findings of Ogunlesi, (2010) and Oche, et al; (2011), who found no significant influence of mother's age and the practice of exclusive or non-exclusive breastfeeding.

4.2.2 Influence of Mother's Level of Education on the Practice of Exclusive and Non-exclusive Breastfeeding

Results from the present study showed that educational attainment significantly influenced (p=.000) the practice of exclusive and non-exclusive breastfeeding of babies. Education still remains the most viable means of reaching everybody on the benefits of exclusive breastfeeding. The influential variables reported in this study were in agreement with other studies, while at variance with others. The study revealed that EBF was highest (96.9%) among tertiary educated mothers compared to those with secondary and primary school education. This implies that the higher the level of education of nursing mothers the better the practice of exclusive breastfeeding. This explains the fact that tertiary educated mothers probably understood the benefits and importance of EBF better This is in agreement with the findings of Shealy, Li, Benton & Grummer (2005), to which mothers who are college graduates were more likely to breastfeed their infants than mothers with lower levels of educational attainment. For infants born in 2007, 60% of mothers with college education breastfed their infant for six months, compared with 41% of mothers with secondary education, 31% with tertiary institution, and 37% with less than a tertiary education. Mothers with some college education were more likely to ever breastfeed than women with lower levels of education, The results of this study support further, the findings of Ojofeitimi

(2000), NDHS (2008), Mundi (2000), Sobo et al (2000), Ogunlesi (2011), who found mother's level of education with at least secondary school education to be positively correlated with the practice of exclusive breastfeeding, and Mundi (2008), also found mother's level of education to be positively correlated with the act of exclusive breastfeeding. In their study, the practice of exclusive breastfeeding increases with increasing educational attainment and decreases with lower educational attainment. The researcher concluded that those not educated, appear to be more traditional in their behaviour, which explains why they viewed the practice of exclusive breastfeeding as "strange and foreign aim at killing the baby, for no human being can survive without water". This further agrees with the findings of Nigeria Demographic and Health Survey's (2008), which revealed a significant influence of education on the practice of exclusive or non exclusive breastfeeding. Infants born to mothers with at least primary education are more likely to be breastfed within one hour of birth than those born to mothers with no education. This, however, does not support the findings of Oche, et al; (2011) which revealed that there is no significant difference between those with formal and informal education with regards to the practice of exclusive breastfeeding. According to the researchers, significantly higher proportions of mothers with at least clinic based antenatal care and delivery in health facilities influenced exclusive breastfeeding. This is because health workers provides the nursing mother with current information on the benefits of exclusive breastfeeding and does not necessary need to pass through a formal education to acquire such knowledge on the benefits of exclusive breastfeeding.

4.2.3 Influence of Mother's Occupation on the Practice of Exclusive and Non-exclusive Breastfeeding

This present study revealed that mother's occupation significantly influenced (p=.044) the practice of exclusive and non-exclusive breastfeeding of infant. The results of this present study, showed, that majority (88.9%) of the nursing mothers who practiced exclusive breastfeeding were fulltime housewives who are not employed compared to those employed

as civil servants (87.6%) or traders (70.2%). This may be due to the fact that fulltime housewives were always at home and so they can easily attend to the baby's needs. In addition, working class nursing mothers may have understands the benefits of exclusive breastfeeding but find it too demanding, and such mothers may express their milk for the duration of the working hours for baby's consumption, and resume normal breastfeeding after work. The market conditions may not have encouraged caring for the baby, hence such babies may have been left under the care of other persons. This findings, is in agreement with the findings of Gielen (1991), Ryan & Martinez (1989). The researchers identified maternal employment as obstacle to initiation and continuation of breastfeeding especially where there are no facilities in the work place and support for breastfeeding. Interestingly, 63.6% of housewives and 59.3% of traders breastfed exclusively for more than four months. In a study of 179 mother-child pairs, 109(61%) were full time house wives while only 21(12%) of the respondents were civil servants who practice exclusive breastfeeding (Oche, et al; 2011). In a separate study in the same zone as the study area, Oche, (2011) obtained 79% exclusive breastfeeding. The higher percentage, obtained in this study was not unconnected with the fact that all the subjects were full time house wives and, therefore, had enough time to carry on breastfeeding for longer periods. This findings, therefore agrees also with that of Noble (2001), which showed that 79% of the women initiated breastfeeding because they did not plan to return to work. They concluded that mothers who planned to return to work six weeks after postpartum were significantly less likely to initiate exclusive breastfeeding compared to mothers who were not planning to return to work. This is because mothers who plan to return to work shortly after six weeks postpartum found it difficult to combine work and exclusive breastfeeding.

Similar findings were reported in a study conducted by Yimyam, Morrow, & Srisuphan, (1999). It was observed that women working outside the home were less likely to breastfeed after they resume work. According to them, at six months postpartum, 80% of

those women working at home were still breastfeeding, whereas, less than 40% of those women employed outside of their home continued to breastfeed. Some studies (Dennis,2002b; Meek, 2001; Wright, *et al;* 2001) have shown that intention to return to paid employment is associated only with breastfeeding duration but not with breastfeeding initiation. Type of work and hours of work have also shown to influence breastfeeding (Visness & Kennedy, 1997).

4.2.4 Influence of Mother's Level of Income on the Practice of Exclusive and Non-exclusive Breastfeeding

Apart from occupation of the mother, the present study revealed the influence of mother's level of income on the practice of exclusive and non-exclusive breastfeeding. Majority (52%) of the nursing mothers that practiced exclusive breastfeeding were non-income earners compared to their counterparts (5.5%) who received salaries of N20,000 and above. This implies that those in higher income earning category practiced less exclusive breastfeeding than those who had no income earning status. This preclude to the fact that those in the highest wealthy status had money to buy artificial milk and other baby foods for their babies. Some of these women may think that breastfeeding is inferior to formula feeding. The findings obtained in this study are in agreement with that of Al-Shoshan (2005), which stated that babies in households in the highest wealth quintile are breastfed for the shortest duration, while other infants are breastfed for up to 6 months and thereafter. This further agrees with the studies by Dee's, (2007), according to which income level contributes to women continuing or discontinuing breastfeeding early. This is because, women in higher status jobs are more likely to have access to a lactation room and suffer less social stigma from having to breastfeed or express breast milk at work. Low income women are more likely to have unintended pregnancies, and women who's pregnancies are unintended are less likely to breastfeed their babies. They are however, in contrast with the findings of NDHS (2008) which stated that children born to mothers in the highest wealthy status (39%) are less

likely to receive a pre-lacteal feed than children born to mothers in the lowest wealthy status (71%). They concluded that exclusive breastfeeding is higher in rich and middle level households than poor households.

4.2.5 Influence of Family Views Regarding the Practice of Exclusive and Non-exclusive Breastfeeding

The present study reveals that influence of family views in the practice of exclusive and non-exclusive was significant (p=.000). This could imply that mothers who had their family supporting them were more likely to exclusively breastfeed their babies compared to mothers without support. This is in consonance with the findings of Arora, et al; (2000), that family is a major source of breastfeeding information for the mother, followed by friends. This present study affirmed the above statement with the findings that, for as many reasons as stated, husband's belief (33.8%) that EBF makes baby looks sound and healthy, and the fact that mother's friends (19.3%) believe breastfeeding makes baby to be intelligent when he or she grows up, caused the nursing mother to exclusively breastfeed. A survey conducted by Arora, *et al;* (2000), revealed that the main reason given for choosing bottle feeding over breastfeeding was the "mother's perception of father's preference". The researchers, however, concluded that, majority of mothers wanted more information on breastfeeding from different sources such as friends, and relatives. This finding is in agreement with the findings of Oche, *et al;* (2011). According to the researchers, more than half 94(53%) initiated breastfeeding in less than 30 minutes after delivery while 85(47%) did so long after 30minutes. Reasons adduced for delayed initiation of breastfeeding among eighty five mothers, included; colostrums being dirty and thought to be harmful to the child, lack of breast milk and mother or child illness. For the women who considered colostrums dirty, while awaiting the coming of the clean milk, they gave boiled water, honey, animal milk and washouts from writings of the Quran slates. The major reason for late initiation of breastfeeding in most (47%) of the respondents was colostrums not pure thus supporting the

general perception in the family that in the first three days, the mother's milk is not pure therefore could harm the infant. This finding is in consonance with that of Onayande (2007) in Ille-Ife, even though the study areas have varying socio-cultural characteristics. While starving the child for the period of not giving colostrums, the child is also denied the benefits of the immunological constituents of colostrums and subsequently delays the proper establishment of lactation later. While awaiting the establishment of the "clean milk" the mothers gave pre-lacteal in form of boiled water, honey and animal milk under the instruction of grandmothers and or mother in-laws. This is in agreement with the findings of Hamidu & Ekele (1997). According to the researchers, some mothers (especially the Hausa/Fulani primiparae) that practice exclusive breastfeeding in the postpartum period later succumb to pressures from grandmothers and or mother-in-laws because these "grannies" were really the custodians of the infants at home. A granny was quoted as having said "it is ungodly not to allow a baby to taste water in the Sokoto weather". Majority (71%) gave water either at the end of a feed or in between feeds as opposed to a pre-lacteal feed.

Lack of support from significant others towards breastfeeding has been observed as major predictors of bottle-feeding. Fathers who support bottle-feeding are more likely to believe that "breastfeeding is bad for the breasts and interferes with sex" (Losch et al., 1995). These findings are in agreement with the present study which revealed that non-exclusive breastfeeding of the nursing mothers are rooted in the fact that husbands feel embarrassed seeing their wives breastfeed publicly. These husbands however, viewed breasts objects only in a sexual context and may not approve of exclusive breastfeeding, because their wives do not give them the desired attention they require from them.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

The purpose of this study was to assess demographic determinants of exclusive and non-exclusive breastfeeding of babies among nursing mothers in Benue State, Nigeria. To achieve this purpose, 10 hospitals were randomly selected using multi-stage sampling technique (simple, stratified and purposive samling techniques). Data was collected using close-ended questionnaire and 500 questionnaires were distributed to nursing mothers who visited antenatal clinics in the randomly selected hospitals, from which 455 were duely completed and returned. Associations between demographic determinants under investigation and breastfeeding practices were analysed and examined using descriptive statistics of frequencies and percentages and cross tabulation statistics to answer the research questions and Chi-square analysis with alpha level of 0.05 to test the formulated hypotheses. The findings indicated high (99.8%) prevalence of breastfeeding among nursing mothers, out of which 83.5% exclusively breastfed up to 4-6 months. The study reveals that;

Mother's age significantly influenced the practice of exclusive and non-exclusive breastfeeding of babies, indicating high practice of exclusive breastfeeding among mothers of 25years and above, and low exclusive breastfeeding practice among younger mothers of 19years old and below.

Mother's level of education significantly influenced the practice of exclusive and non-exclusive breastfeeding of babies, indicating high exclusive breastfeeding practices among literate mothers with at least secondary education. Those with low educational attainment had poor or low practice of exclusive breastfeeding.

Mother's occupation significantly influenced the practice of exclusive and non-exclusive breastfeeding of babies, indicating high practice of exclusive breastfeeding among

non-working class mothers, especially the fulltime housewives. Low practiced of exclusive breastfeeding was, however, noticed among those with fulltime jobs outside their homes.

Mother's level of income significantly influenced the practice of exclusive and non-exclusive breastfeeding of babies,

Family views significantly influenced the practice of exclusive and non-exclusive breastfeeding of babies.

5.2 Conclusion

Based on the results of this study and its limitations, the following conclusions are drawn:

1. Older mothers practiced exclusive breastfeeding, while younger mothers practiced non-exclusive breastfeeding of their babies in Benue State.
2. Mothers with higher level of education practiced exclusive breastfeeding, while mothers with low or no educational attainement practiced non-exclusive breastfeeding of their babies in Benue State.
3. Fulltime mothers with no job practiced exclusive breastfeeding, while working class mothers practiced non-exclusive breastfeeding of babies in Benue State.
4. Mothers with lesser income, practiced exclusive breastfeeding, while mothers with higher income, practiced non-exclusive breastfeeding of their babies in Benue State.
5. Family/friends views influenced both the decision to practice exclusive and non-exclusive breastfeeding of babies in Benue State.

5.3 Recommendations

On the basis of the conclusions drawn, the following recommendations are made to improve breastfeeding practices in Benue State:

1. Special interventions should be made for young mothers with poor breastfeeding practices usually (15-19years) by health care workers to encourage them endure the

herculean task of breastfeeding, through education, and nursing support to enable them breastfeed exclusively.

2. Since education remains the most viable means of reaching mothers on the benefits derived from exclusive breastfeeding, health care workers should intensify education to provide mothers with complete and current information on the methods of exclusive breastfeedig, to increase mother's knowledge of benefits derived from exclusive breastfeeding of babies. Government should also make policies geared towards encouraging nursing mothers to attend postnatal clinics, since most of them get their information by attending postnatal clinics.
3. Employers of labour should extend maternity leave for up to one year for nursing mothers or establish day care centres within the working environment to enable mothers breastfeed their babies more conveniently and adequately.
4. Government should create gender-sensitive jobs, targeted at women who are economically vulnerable in society, to enable them purchase food items to replenish the source of breast milk to enable them breastfeed exclusively.
5. Since family/friends' decision significantly influenced the practice of exclusive and non-exclusive breastfeeding, such, should endeavour to accompany nursing mothers for antenatal/postnatal clinics to be provided with current information on the benefits of exclusive breastfeeding.

5.4 Recommendations for Future Research

In the cause of this investigation, the researcher came across some contentious issues about breastfeeding which are suggested below for future research:

1. Many factors are adduced to influence breastfeeding practices. It is, therefore, not clear whether religious practices affect breastfeeding. A study can be undertaken on the influence of religion and the practice of exclusive and non-exclusive breastfeeding.

2. Also, a similar study can be undertaken on comparative study of rural and urban mothers and the practice of exclusive and non-exclusive breastfeeding.

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APPENDIX A

Department of Physical and Health Education,

Faculty of Education,

Ahmadu Bello University, Zaria

Dr/Prof……

REQUEST TO VET QUESTIONNAIRE

Mr. P.T Akosu is a Postgraduate student of the Department of Physical and Health Education of Ahmadu Bello University, Zaria. His area of specialization is Health Education. He is conducting his research on the "Demographic Determinants of Exclusive and Non-Exclusive Breastfeeding among Nursing Mothers in Benue State", which is a prerequisite for his graduation. To enable him successfully carry out this research, he has developed a questionnaire which, I am sending, herewith. Based on your professional expertise and experience in the field of research, you have been chosen as one of the jurors to vet this questionnaire to improve its quality and appropriateness.

I would be grateful if you kindly spare your precious time to go carefully through this and critically make your observations and suggestions. The candidate will collect the questionnaire from you personally.

Thank you.

Dr (Mrs) V. Dashe

Signed

Supervisor

APPENDIX B

DEPARTMENT OF PHYSICAL AND HEALTH EDUCATION

AHMADU BELLO UNIVERSITY, ZARIA - NIGERIA

(OFFICE OF THE HEAD OF DEPARTMENT)

Vice-Chancellor: PROFESSOR ABDULLAHI MUSTAPHA, *B.Sc. (Hons) Pharm. (A.B.U), Ph.D. (London), FPSN*
Head of Department: PROFESSOR C. E. DIKKI, *NCE, B.Sc.Ed., M.Ed., Ph.D. (ABU)*

Our Ref: M.Ed/Educ/06307/2010-2011

Your Ref: _____

Date: 22nd January, 2013

_____

_____

_____

_____

Dear Sir,

INTRODUCTION OF COLLECTION OF DATA –
AKOSU TERSEER PEPTER (M.Ed/Educ/06307/2010-2011)

The bearer is a postgraduate student of this Department, and he is currently conducting a research on **"Demographic Determinants of Exclusive and Non-Exclusive Breastfeeding among Nursing Mothers in Benue State, Nigeria."** in which your hospital has been selected for data collection.

In this regard, I wish to request for your kind permission and support to use your hospital to collect data for his M.Ed research.

Please assist him.

Thanking you.

Dashe.

Dr. (Mrs.) V. Dashe
Major Supervisor

APPENDIX C

QUESTIONNNAIRE

SECTION A: Demographic Characteristics of Nursing Mothers

1. **Age Range of Nursing Mothers (In years)**

   a. 15 – 19 [ ]

   b. 20 -24 [ ]

   c. 25 – 29 [ ]

   d. 30 – 34 [ ]

   e. 35 and above [ ]

2 . **Educational Level of Nursing Mothers**

   a. Primary [ ]

   b. Secondary [ ]

   c. Tertiary [ ]

   d. Quaranic Education [ ]

   e. Did not attend school [ ]

3**. Mother's Occupation**

   a. Fulltime housewife [ ]

   b. Civil Servant [ ]

   c. Trader [ ]

   d. Farmer [ ]

   e. Others [ ]

4. **Monthly Income of Nursing Mothers**

   a. Below N5000 [ ]

   b. N5000 – N10,000 [ ]

   c. N10,000 - N20,000 [ ]

d. N20,000 - N30,00 [ ]

e. N30,000 and above [ ]

f. No salary [ ]

Statements are given. Please tick the column that best represents your feeling.

SECTION B: Opinion of Mothers on Methods of Breastfeeding Adopted

5. Do you breastfeed exclusively? (giving breast milk only for the first six months of life)

Yes [ ] No [ ]

6. If yes, what are your reasons for breastfeeding exclusively?

a. Because my husband believes breastfeeding makes baby look sound and healthy [ ]

b. Because grandmother believes breastfeeding makes baby grow faster [ ]

c. Because my sister believes breastfeeding makes baby develop faster [ ]

d. Because my mother believes that breastfeeding brings me more closer to my baby (bonding) [ ]

e. Because my friends believed that breastfeeding makes baby to grow safe, independent as a child [ ]

f. Because my friends believes breastfeeding makes baby to be more secured [ ]

g. Because my sister- in-law said breastfeeding makes baby to develop independently as a child [ ]

h. My grandmother said breastfeeding will give me a sense of duty to your baby [ ]

i. Because my friends told me that breastfeeding makes me lose weight [ ]

j. Because my sister believes breastfeeding makes the baby to be intelligent when he/she grows up [ ]

k. Others (specify)……

7. You do not exclusively breastfeed your baby because:

a. My husband feels he does not get the desired attention from me [ ]

b. Grandmother/mother-in-law feels breast milk alone is not enough for the first six months [ ]

c. I was not fed with breast milk by my own mother, so she feels that I should not give breast milk only to my baby [ ]

d. My family believed that water is life and must be given to the baby before six months [ ]

e. My husband believes that the size of my breast is small and cannot produce enough milk [ ]

f. My husband said breasts are sex objects and should be used only in sexual context [ ]

g. My husband feels embarrassed when I am breastfeeding publicly [ ]

8. Did you give your baby colostrums? (first milk soon after birth, usually yellowish in colour)

Yes [ ] No [ ]

9. If no, what are your reasons?

a. my husband believes colostrums is bad [ ]

b. my grandmother believes colostrums is not the original milk [ ]

c. my sister believes colostrums can cause the baby to be sick [ ]

10. If you did give colostrums, what are your reasons?

a. my friends believes colostrums contains all the nutrients the baby needs [ ]

b. my mother in-law believes colostrums protects the baby from infections [ ]

SECTION C: Feeding Patterns by Nursing Mothers

Mother's Main Source of Breastfeeding Information

11. Have you ever heard about exclusive breastfeeding?

Yes [ ] No [ ]

12. If yes, how did you get to know about exclusive breastfeeding?

a. My friends told me [ ]

b. I read about it in the newspaper/article [ ]

c. I watch it on TV [ ]

d. I listen to it on radio [ ]

d. I got to know about it during ante-natal classes [ ]

e. I learnt about it in school [ ]

Time Mother Initiates Breastfeeding after Delivery

13. How soon after birth did you start breastfeeding?

a. Less than 30 minutes, soon after birth [ ]

b. 30 minutes to 1 hour [ ]

c. 1 hour to 24 hours [ ]

d. More than 24 hours [ ]

Number of Times Baby Breastfed in 24 Hours

14. How many times since yesterday has the baby been breastfed?

a. 2 – 3 times [ ]

b. 4 -7 times [ ]

c. 8 - 9 times [ ]

d. 10 times and above [ ]

e. When the baby cries [ ]

Number of Minutes Baby Breastfed per Breast

15. How long do you breastfeed your baby on one breast

a. Less than five minutes [ ]

b. 5 -10 minutes [ ]

c. 10 - 15 minutes [ ]

d. 15 -20 minutes [ ]

e. 20 -25 minutes [ ]

f. 25 -30 minutes [ ]

g. 30 minutes and above [ ]

SECTION D

Reasons for Exclusive Breastfeeding

16. Do you breastfeed exclusively?

Yes [ ] No [ ]

17. If yes, what are your reasons?

a. Breastfeeding makes baby have lesser infections [ ]

b. Breastfeeding reduces sudden infant death syndrome [ ]

c. Breastfeeding reduces the risk of baby developing obesity [ ]

d. Breastfeeding may delay the return to fertility [ ]

e. Breastfeeding transmits antibodies to the baby [ ]

f. Breastfeeding decreases the risk of breast cancer [ ]

18. If you do not breastfeed exclusively, what are your reasons?

a. No time due to employment [ ]

b. No time due to business [ ]

c. Because of my academic commitment [ ]

d. Breastfeeding makes my breast sag [ ]

e. Because of pain in the breast [ ]

f. Because I am sick [ ]

g. Breast milk does not flow [ ]

h. Because I am fasting [ ]