



**UNIVERSITI PUTRA MALAYSIA**

***FACTORS ASSOCIATED WITH BREASTFEEDING PRACTICES AMONG  
MOTHERS OF 0-6 MONTH-OLD INFANTS IN JOS NORTH LGA,  
PLATEAU  
STATE, NIGERIA***

**JACDONMI ITSE**

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MOTHERS OF 0-6 MONTH-OLD INFANTS IN JOS NORTH LGA, PLATEAU  
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**By**

**JACDONMI ITSE**

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in  
Fulfilment of the Requirements for the Degree of Master of Science**

**April 2016**

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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfillment of the requirement for the degree of Master of Science

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By

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**April 2016**

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**Faculty : Medicine and Health Sciences**

**Background:** Exclusive breastfeeding practice (EBF) is a safe and simple intervention in improving child health and growth. However the practice of EBF is still low especially in developing countries despite an increase in awareness and understanding of exclusive breastfeeding. Exclusive breastfeeding has been identified to be the most significant and effective child survival strategy and accounts for 15 % of preventable infant deaths. Early introduction of breast milk and exclusive breastfeeding has been found to be quite low, with percentages of 38 % and 17 % only respectively in Nigeria.

**Objective:** To determine infant feeding practices, factors associated with breastfeeding practices among mothers and determine the nutritional status of infants 0-6 months in Jos North LGA, Nigeria.

**Methodology:** This was a cross-sectional study. Data was collected from 310 mother-infant pairs giving an overall response rate of 96.3 %. A multistage sampling was employed. Three primary health care facilities in Jos North LGA were randomly selected, simple random sampling probability proportionate to size was carried out to calculate number of respondents from each health facility, and afterwards, a computer generated table of random numbers was employed to select mothers using the sampling frame which was made from the immunization register at the health facilities. Data collection consisted of two parts. A validated questionnaire was administered to mothers. The questionnaire consisted of questions relating to socio-demographic characteristics, breastfeeding and also weaning practices. Anthropometric measurements (weight and length of infants) were taken. Main outcome measures were factors associated with breastfeeding practice, nutritional indices in terms of stunting, underweight and wasting of infants. Data analysis was performed using SPSS 22 and Epi Info 2007. All results were significant at alpha value  $\leq 0.05$ .

**Results:** All mothers (100 %) were still breastfeeding at the time of data collection. However, only 39.7 % were seen to practice exclusive breastfeeding. About 33 % of infants had already been introduced to complementary foods even before the age of 6 months. In multivariate logistic regression, maternal and related factors associated with EBF included mothers perceived insufficient breast milk supply (AOR=0.194; 95 % CI: 0.074-0.509), mothers ability to express (AOR=10.697; 95 % CI: 4.578-24.993), EBF duration understanding, 0-1 months (AOR= 0.225; 95 % CI: 0.079-0.641) and time at which breastfeeding was initiated immediately after birth (AOR=2.732; 95 % CI: 1.455-5.128). Mother's socio-demographic predictors of EBF included ethnicity and marital status. In terms of prevalence of malnutrition among males, 13.2 % were severely stunted, 1.6 % were severely underweight and 6.5 % were wasted. Among females, 8.4 % were severely stunted, 0.6 % were severely underweight and 6.6 % were severely wasted. There was a significant difference in nutritional indices and breastfeeding patterns ( $p<0.05$ ).

**Conclusion:** Exclusive breastfeeding rates are still low and does not conform to the guidelines and recommendations on appropriate infant feeding by WHO and UNICEF. Factors associated with the breastfeeding practices are mother's ethnicity, marital status, perception of insufficient breast milk production, ability to express breast milk, understanding of exclusive breastfeeding duration and the time at which a mother initiated breastfeeding. These study's findings should serve as baseline for exclusive breastfeeding interventional studies and programs.

**Keywords:** Breastfeeding, Infants, Anthropometry, Nutritional Status, Nigeria

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Master Sains

**FAKTOR BERKAITAN AMALAN PEMBERIAN SUSU IBU DI KALANGAN IBU KEPADA BAYI BERUSIA 0-6 BULAN DI JOS NORTH LGA, PLATEAU STATE, NIGERIA.**

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**Latarbelakang:** Amalan pemberian susu ibu secara eksklusif (*Exclusive Breast Feeding*, EBF) merupakan satu kaedah intervensi yang selamat dan mudah dalam memastikan kesihatan dan tumbesaran bayi. Namun demikian, amalan ini masih rendah terutama di kalangan negara membangun walaupun terdapat pertambahan dalam tahap kesedaran dan pengetahuan berkenaan EBF. EBF telah dikenalpasti sebagai strategi paling signifikan dan berkesan dalam memastikan kemandirian bayi dan terlibat dalam 15 % kematian yang dapat dicegah. Pengenalan awal kepada susu ibu dan amalan EBF didapati agak rendah di Nigeria, masing-masing pada kadar 38 % dan 17 %.

**Objektif:** Menentukan amalan penyusuan bayi, faktor berkaitan amalan EBF di kalangan ibu dan status nutrisi bayi berusia 0-6 bulan di Jos North LGA, Nigeria.

**Metodologi:** Ini merupakan kajian keratan lintang. Data dikumpul dari 310 pasangan ibu-bayi memberikan kadar respon 96.3 %. Pensampelan pelbagai peringkat diguna pakai. Tiga pusat kesihatan primer in Jos North LGA telah dipilih secara rawak, menggunakan teknik pensampelan rawak mudah dengan kebarangkalian berkadar dengan saiz digunakan untuk mengira jumpah responden dari setiap pusat. Selepas itu, jadual nombor rawak dijana oleh computer digunakan untuk memilih ibu-ibu dari kerangka pensampelan yang merupakan daftar imunisasi di pusat-pusat berkenaan. Pengumpulan data dijalankan dalam dua peringkat. Soalselidik yang telah ditentu sahkan diedarkan kepada ibu terpilih. Soalselidik yang mengandungi soalan berkaitan sosio-demografi, amalan penyusuan susu ibu dan bercerai susu. Ukuran antropometri (berat dan panjang bayi) diukur. Langkah-langkah hasil utama adalah faktor berkaitan amalan EBF, indeks nutrisi iaitu pembantutan, kurang berat badan dan penyusutan bayi. Analisis data dibuat menggunakan SPSS 22 dan Epi Info 2007. Keputusan adalah signifikan pada nilai alfa  $\leq 0.05$ .

**Keputusan:** Kesemua ibu (100%) masih memberi susu ibu pada masa pengumpulan dara. Namun demikian hanya 39.7 % mengamalkan EBF. 33 % bayi telah diberikan makanan komplementari sebelum mencapai usia 6 bulan. Melalui *multiple logistic regression*, faktor yang dikaitkan dengan amalan penyusuan termasuk ibu berasa penghasilan susu tidak mencukupi (AOR=0.194; 95 % CI: 0.074-0.509), kebolehan ibu mengeluarkan susu (AOR=10.697; 95 % CI: 4.578-24.993), pemahaman tempoh EBF, 0-1 bulan (AOR= 0.225; 95 % CI: 0.079-0.641), serta masa penyusuan susu ibu dimulakan selepas kelahiran (AOR=2.732; 95 % CI: 1.455-5.128). Prediktor EBF dari sudut sosiodemografi ibu termasuk kumpulan etnik dan status perkahwinan. Dari segi prevalen malnutrisi di kalangan bayi lelaki, 13.2 % mengalami pembantutan yang teruk, 1.6 % kurang berat badan dan 6.5 % mengalami penyusutan teruk. Di kalangan bayi perempuan 8.4 % mengalami pembantutan teruk, 0.6 % kurang berat badan dan 6.6 % mengalami penyusutan teruk. Terdapat juga perbezaan yang signifikan pada indeks nutrisi dan pola pemberian susu ibu ( $p < 0.05$ ).

**Kesimpulan:** Kadar EBF masih rendah dan tidak memenuhi garis panduan serta syor penyusuan bayi yang dikeluarkan WHO dan UNICEF. Faktor yang dikaitkan dengan amalan penyusuan adalah kumpulan etnik ibu, taraf perkahwinan, persepsi penghasilan susu yang tidak cukup, kebolehan mengeluarkan susu, pemahaman tempoh masa penyusuan secara eksklusif dan masa bila mana ibu memulakan penyusuan badan. Hasil dari kajian boleh menjadi asas untuk kajian intervensi penyusuan ibu eksklusif pada masa hadapan.

**Kata Kunci:** Penyusuan Susu Ibu, antropometri, status pemakanan, Nigeria

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## LIST OF ABBREVIATIONS

AHRQ	Agency for Health Care Research and Quality
ANC	Antenatal Care
AOR	Adjusted Odds Ratio
BFHI	Baby Friendly Hospital Initiative
CDC	Centers for Disease Control and Prevention
CHWS	Community Health Workers
CWCS	Child Welfare Clinics
DHS	Demographic Health Survey
EBF	Exclusive Breastfeeding
HC	Head Circumference
HCPS	Health Care Providers
IDDM	Insulin Dependent Diabetes Mellitus
IYCF	Infant Young And Child Feeding
LACORS	Local Authorities Coordinators of Regulatory Services
LAZ	Length-For-Age
LGA	Local Government Area
MAC	Mid-Arm Circumference
MCH	Maternal and Child Health
MICS	Multiple Indicator Cluster Surveys
MUAC	Mid Upper Arm Circumference
NDHS	Nigerian Health Demographic Survey
NPI	National Programme on Immunization
ORT	Oral Rehydration Therapy
PHCCS	Primary Health Care Centers
PNC	Post Natal Care
SD	Standard Deviation
SPSS	Statistical Packages For Social Sciences
UNAIDS	United Nations programme on HIV And AIDS
UNICEF	United Nations International Children's Emergency Fund
WAZ	Weight-For-Age

WHO  
WLZ

World Health Organization  
Weight-For-Length



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## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background of the study

Breastfeeding has been strongly recommended by World Health Organization (WHO) and United Nations International Children's Emergency Fund (UNICEF) as the ideal and appropriate infant feeding for optimal growth and development (WHO, 2010). Breast milk is the ideal principle nourishment for infants and should be initiated within the first one hour of birth and sustained for 6months. Following this, appropriate and adequate complementary foods should be introduced alongside breast milk for a period of 1year or above (WHO, 2010). Breast milk has been agreed upon by experts through various researches as having the full capacity to provide a baby's nutritional need for the first six months of life without the introduction or addition of water, drinks or any other foods (Nielsen et al., 2011; Butte et al., 2002).

Several benefits are accrued to breastfeeding, ranging from breastfeeding stimulating the immune system of babies to the protective effect against acute respiratory infections, diarrhea, urinary tract infections, necrotizing enterocolitis, bacterial meningitis, sudden infant death syndrome, lymphoma amongst others (Henkle et al., 2013). Improvements in response to immunizations and also secretory IgA antibodies passed to these babies through the intake of colostrum, the first milk produced for newborn babies (Henkle et al., 2013; Qadri et al., 2013; Lepage& Van de Perre, 2012). Breastfeeding is beneficial even to mothers, breastfeeding creates a special between mothers and infants, and helps weight loss due to pregnancy, amongst others. The breast milk is adequate and has the capacity to provide the nutritional needs of infants. It constitutes high amounts of carbohydrates, proteins, fats, minerals and vitamins. Whereas, infant formula as an alternative to breast milk cannot contain the same benefits (Davidson, 2011).

For infant's optimal growth and survival, the human milk is the principle nourishment. Exclusive breastfeeding (EBF) is the initiation of breastfeeding within one hour of birth and sustained for the first six months of life. This way of infant feeding is the appropriate and sustainable way to feed an infant for the first six months of life. However, breastfeeding is necessary after six months and so should be sustained for 2 years or more along with appropriate complementary feeding. It has been recommended since 2001 by WHO (WHO, 2001).

Optimal growth and development is best achieved when babies feed this way. This exclusive and appropriate complementary feeding by mothers can be achieved only when they know its importance, how to go about it and when they are provided with necessary support (Gustafson, 2015). Breast milk has been agreed upon by experts to

provide all that a baby would need for the first 6 months, with no drinks (water) or feeds needed during this period (Fewtrell et al., 2011).

EBF is where babies receive only breast milk from mothers or wet nurse or the breast milk expressed, no other extra food or drink. The definition of EBF is “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 vitamins, minerals and medications” (Labbok et al., 2011). It has been recommended by national and international guidelines that infants be exclusively breastfed for six months (WHO, 2010). Breastfeeding can be continued with appropriate complementary foods for 2 years or more. It has been shown that EBF reduced deaths of infants dramatically in developing countries, by reducing diseases such as diarrhea and other infectious diseases. Also, the reduction of Human Immune Deficiency Virus(HIV) transmission from mother to child as compared to mixed feeding (Adler et al., 2012).Over the past years, the promotion of EBF as the best feeding mode for newborns has been of great interest. To a large extent, evidence of scientific importance of EBF in the reduction of infant morbidity and mortality has been inspired by this (Patel et al., 2015).

In settings in which suboptimal breastfeeding practices often result to infant malnutrition, a major cause of more than half of all infant deaths, EBF is imperative for child’s survival (Gupta et al., 2013). Of a truth, of the 6.9 million under 5 years children reported dead globally in 2011, about 1 million lives could have been saved simply by appropriate practices as EBF. It is for this reason, WHO and UNICEF recommended EBF for 6 months and complementary feeding followed for 24 months or more (WHO, 2010).

EBF causes stimulation of babies immune systems and can protect them from acute respiratory infections and diarrhea (Lepage & Van de Perre 2012; Qadri et al., 2013), these are the two major causes of child mortality especially in developing countries. Also, EBF improves responses to vaccination of infants (Henkle et al., 2013).Substitutes of breastmilk carry risks of infections fatal to infants, particularly in places of unhygienic conditions. Even with this, only a little more than 1/3 of all children are exclusively breastfed in developing countries for the first six months of life (Barnes et al., 2012).

There has been insufficient progress in Nigeria towards achieving the MDGs 4 & 5 which centers on improving maternal health and reduction of child mortality (WHO/UNICEF, 2008; WHO/UNICEF, 2013). In Nigeria, the rate of reduction of under five deaths was estimated to be 1.2 % in 2008 significantly less than the required 10.1 % (WHO/ UNICEF, 2008; WHO/UNICEF, 2013). This consequently suggests drastic measures be put in place to accelerate the reduction of under-five mortality rates in the country.

Currently, it has been estimated that 6.7 % of children born, die before they get to one year of life and 12.5 % die before their fifth birthday in Nigeria (NPC, 20014). Worldwide, Nigeria is the second highest contributor in terms of under-five and maternal mortality rates (You et al., 2013). Also, studies have revealed Nigeria to be one of the countries with inequality in maternal, newborn and child health interventions (Baros, Ronsman et al., 2012, Kayode, Adekanmbi et al., 2012). In the north central region of Nigeria, children are more likely to die before reaching their fifth birthday when compared to their counterparts in the north eastern region (Kayode, Adekanmbi et al., 2012). Therefore, by increasing the proportion of mothers who exclusively breastfeed, infant mortality could potentially be reduced.

Infant feeding is a highly important role in ensuring infant and child survival (Adeyemi, 2014; Okolo, Adewumi et al., 1999). Infants who are not breastfed exclusively are most exposed to diarrhea and several other infections (UNICEF, 2013). Malnutrition among children under five years accounts for about 10 million deaths yearly. And over 60 % of these deaths reportedly occur in the first one year of life. There is a close association between malnutrition and poor infant feeding practices (breastfeeding and complementary feeding) (WHO, 2001).

A study by Black et al., (2008) suggested that suboptimal breastfeeding accounts for approximately 1.4 million children deaths and 44 million disabilities as a result of severe disease impact on growth and development. Early initiation and EBF continuity are protective against about 16 % neonatal mortality, preventable if all infants are breastfed from day one, and about 22 % preventable where breastfeeding is initiated within the first 1 hour of life (Edmond et al., 2006). This consequently emphasizes the fact that breastfeeding is a crucial component of child survival (Worugji & Etuk, 2005) and is also a vital public health intervention in protecting and promoting the health of infants and children (Fairbank et al., 2000).

The consistent reduction in the prevalence of EBF worldwide necessitated the introduction of promotion initiatives of breastfeeding by WHO/UNICEF and other national governments, which include the Baby Friendly Hospital Initiative (BFHI) and International code of marketing of breast milk substitutes (Fairbank et al., 2000). These promotion initiatives have been launched to protect, promote as well as support breastfeeding through the provision of accurate and adequate information on infant feeding practices and regulation of market breast milk substitutes (UNICEF, 2013).

## **1.2 Statement of the problem**

Over one third of Nigerian children under-five years are malnourished with 29 % being underweight (NPC, 2014). Over time, infant feeding practices in Nigeria have continuously changed (FMOH, 2011; NPC, 2014). Exclusive breastfeeding rates of infants 0-6 months are still low with only 17 %, suggesting that majority of mothers in Nigeria are yet to accept EBF due to various traditional & cultural orientations (Ajayi, et al., 2011; Oyibo et al., 2011). The introduction of prelacteal foods and subsequent

mixed feeding with several traditional feeds is the norm of several cultures in Nigeria, making these practices seem more reasonable to practice as many mothers have believed in these traditions for many generations (Ajayi et al., 2011).

EBF accounts for 15 % preventable infant deaths such pneumonia, diarrhea, malaria, ear and respiratory tract infections as well as meningitis as it the most strategic intervention towards child survival. In spite of efforts to increase EBF understanding and prevalence. Only 17 % of infants 0- 6 months are exclusively breastfed in Nigeria (NDHS, 2013) with a median duration of 0.5 months of EBF. This remained significantly unchanged since the year 2008 where EBF rates were only 13 % (NDHS, 2008), despite the introduction of the BFHI since the year 1991. In terms of substantial geographical variability, there is a relatively lower prevalence in both rural and urban jurisdictions in the North West, north east and north central; where the study location, Plateau state lies, when compared to other jurisdictions (NDHS, 2013).

Plateau state is situated in the north central geographical region of the country. Health indices are better in the southern region of Nigeria when compared to the northern region (NPC, 2014). In terms of child mortality, Plateau state has an under-five mortality rate of approximately 165 per 1000 live births (Plateau State Government, 2009). This is higher than 128 per 1000 live births estimated at the national level (NPC, 2014).

In Plateau State, infant feeding practices of infants 0- 6 months as well as rates are not clear, the factors that influence or determine infant feeding practices are also not known. Therefore, a study to identify these factors in plateau state is deemed worthy for the redesigning and planning of breastfeeding promotion interventions as exclusive breastfeeding is a priority high impact intervention to be delivered in the state as part of the key essential package of health services. The Jos North LGA of plateau state was purposefully selected because it is the capital of the state, being an urban area, having respondents with varied socio-demographic and economic characteristics. This gives a wider generalizability of the population.

Socio demographic factors have been found to be a determinant of infant feeding in several settings, however the way and manner in which these factors have an influence varies. This study also sought to identify other barriers to exclusive breastfeeding in Jos North LGA, Plateau state specifically individual factors such as understanding of EBF, perceptions on breast milk supply, ability to express etc., interpersonal factors which included social support and institutional factors such as counselling/ IYCF messages received at health facilities during ANC and PNC as well as other maternal related factors.

### **1.3 Significance of study**

Even though breastfeeding is a normal expectation of Nigerian mothers, several factors may influence mother's decisions and perceived abilities to breastfeed. It is of importance that these factors which influence EBF be understood, this would consequently help support mothers to exclusively breastfeed for the recommended 6 months.

Findings and recommendations from this study would be of importance in the planning of public health interventions geared towards promoting and sustaining EBF practices. Health educations and interventional studies would be improved to help eliminate barriers to EBF practices. Also, this study finding can be used in the design of effective and appropriate breastfeeding interventional programs specifically aimed at improving infant and young child feeding. These findings and recommendations would also contribute to the scientific body of knowledge in this study area and can also serve as a basis of child health policies implementation respectively.

### **1.4 Research questions**

Research questions to be addressed in this study include:

- I. What are the breastfeeding practices among infants in their first six months of life in the area of study?
- II. What is the relationship between mother's socio-demographic characteristics and breastfeeding practice?
- III. What are the maternal and related factors associated with EBF practice among mothers of infants 0-6 months?
- IV. Do breastfeeding practices influence the nutritional status of infants 0-6 months in the area of study?

### **1.5 Aims and objectives**

#### **1.5.1 General objective**

This study was aimed at determining the breastfeeding practices, its associated factors and the nutritional status of infants 0-6 months in relation to their breastfeeding practices in Jos North Local Government Area (LGA), Plateau State, Nigeria.



### 1.5.2 Specific objectives

- I. To describe the socio demographic characteristics of mothers and infants in the study.
- II. To determine the breastfeeding practices among mothers of infants 0-6 months
- III. To determine the relationship between mother's socio-demographic characteristics (Such as mother's age, ethnicity, level of education, marital status, occupation, number of children and religion) and their breastfeeding practices.
- IV. To determine maternal-related factors (such as parity, child's birth order, ANC attendance, understanding of EBF duration, perceived insufficient breast milk supply, ability to express breast milk, time of breastfeeding initiation, place of delivery, mode of delivery, availability of health messages at clinics and perceived social support) associated with breastfeeding practices
- V. To determine and compare the nutritional status of infants; underweight (weight for age), wasting (weight for height) and stunting (height for age) in relation to their breastfeeding practices

### 1.6 Research hypotheses

- I. H1. There is a relationship between mother's socio economic and demographic characteristics and breastfeeding practices.
- II. H3. There are maternal-related factors(such as parity, child's birth order, ANC attendance, understanding of EBF duration, perceived insufficient breast milk supply, ability to express breast milk, time of breastfeeding initiation, place of delivery, mode of delivery, availability of health messages at clinics and perceived social support) associated with breastfeeding practices.
- III. H4. There is a difference in nutritional status between infants 0-6months exclusively breastfed and non-exclusively breastfed.

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## BIODATA OF STUDENT

Jacsonmi Itse hails from Delta state in Nigeria, West Africa. She was born into a family of three. She had her primary school education at Mafeng private school and secondary school at St. Benedict's seminary and convent, Pankshin. She obtained her first degree in BSc. Biochemistry from the University of Jos, Nigeria. Her principal interests are in maternal and child survival. This prompted her decision to seek a master's degree in Public health. She has worked as an Adhoc staff of UNICEF D-field office Bauchi State, as an independent supervisor during national Maternal and Child Health Weeks (MNCHW) programs in Kano State and Nasarawa State. She has also served as an independent monitor on several occasions for WHO Plateau State and Gombe state during Immunization Plus Days (IPDs) and Supplemental Immunization Activities (SIAs). She worked with the Gombe State Agency for the Control of AIDS (GOMSACA) as volunteer. She has been involved in community development services particularly on Orphans and Vulnerable Children (OVCs) in Gombe State. She is also a member of the Nigerian Redcross, Jenta Adamu attachment. Her hobbies include traveling, making new friends and reading novels.

## LIST OF PUBLICATIONS

- Jacdonmi, I.,** Suhainizam M.S., Jacdonmi G.R (2015). Breastfeeding, a Child Survival Strategy against Infant Mortality in Nigeria: A Review. *Current Science*, vol. 110, No. 7, 10 April 2016. doi: 10.18520/cs/v110/i7/1282-1287
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