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Infant and Young Child Feeding in Four Departments in Haiti: A Mixed-method Study of Practices, Determinants, Attitudes, and Beliefs

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By

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Bachelors of Arts
George Washington University
2012

Thesis Committee Chair: Helena Pachón, PhD, MPH

An abstract of
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Rollins School of Public Health of Emory University
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2014

Abstract

Infant and Young Child Feeding in Four Departments in Haiti: A Mixed-method Study of Practices, Determinants, Attitudes, and Beliefs

By Anne Laterra

Objectives: Although breastfeeding is near universal in Haiti, sub-optimal complementary feeding practices have been observed and documented. The objective of this study was to determine the prevalence and patterns of exclusive breastfeeding (EBF), continued breastfeeding (CBF) and diverse complementary feeding among children less than 24 mo in four regions in Haiti. This study also aims to identify attitudes and beliefs that inform these behaviors and identify factors associated with these recommended practices.

Methods: This study utilized a mixed-methods approach consisting of a cross-sectional survey of 310 women and 12 focus group discussions among women with children ≤ 2 y of age. Multivariable logistic regression analyses were conducted to identify factors associated with EBF for the first 6 mo of life, CBF for ≥ 2 y of age, and receipt of a diverse variety of complementary foods. Qualitative data were recorded, transcribed verbatim and analyzed for common themes.

Results: The prevalence of EBF, CBF, and achievement of minimum dietary diversity (MDD) was 57%, 11.9% and 21.2%, respectively. EBF was statistically significantly associated with infant's age when controlling for annual household income, location of most recent birth, or receipt of continued-breastfeeding counseling [OR=0.67 (95% CI: 1.10-16.60)]. CBF was not statistically significantly associated with rural place of residence, receipt of continued breastfeeding counseling, parity, or infant's age. Meeting MDD was not significantly associated with parity, receipt of postnatal care, rural place of residence, location of most recent birth, receipt of IYCF counseling, or level of schooling attended. Beliefs surrounding the relationship between the mother's health and her diet on the quality of breastmilk may prohibit EBF and CBF. Qualitative data revealed that dietary diversity may be low because mothers often struggle to introduce complementary foods and those that are traditionally introduced are not varied and primarily consist of grains and starches.

Conclusions: The practice of the three recommended IYCF practices examined in this study is sub-optimal, particularly CBF and achievement of MDD. Future communication and programming efforts should address the misunderstandings and concerns identified through qualitative methods.

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CHAPTER 1: INTRODUCTION

Optimizing child nutrition is an integral part of efforts to improve child health. Undernutrition contributes significantly to under-five mortality; more than three million children die every year from undernutrition,. This represented 45% of all child deaths in 2011 (1). Improving infant and child nutrition, however, is not a simple task. A complex set of economic, social and political causes contribute to persistent undernutrition making efforts to address it necessarily complex and multi-faceted. In 2012, the World Health Organization (WHO) specifically acknowledged the importance of child nutrition to health outcomes and set a global target of a 40% reduction in stunting among under-five children by 2025 (2). This increased focus on childhood nutrition has led to the Scaling Up Nutrition (SUN) movement which was first championed by the World Bank and the International Monetary Fund and now includes 49 member countries who are committed to improving nutrition through effective national policy and action (3). Despite significant progress and renewed resources, a recent update of the Lancet's 2008 series on maternal and child nutrition (4) found that the nutritional status among children in low- and middle-income countries must continue to be improved, particularly in sub-Saharan Africa and South Asia, where rates of stunting remain high. In an effort to identify evidence-based solutions to malnutrition, Bhutta et al. (5) found that in bringing a set of ten effective programs to 90% coverage 15% of under-five deaths could be prevented worldwide. Efforts to improve Infant and Young Child Feeding (IYCF) practices were identified as one of the ten most-effective programs.

Despite programmatic efforts and successes to improve IYCF practices across many countries, rates of exclusive breastfeeding, continued breastfeeding and diverse

complementary feeding and other key practices often remain suboptimal (6). As the world aims to meet the most recent World Health Assembly target of reducing stunting by 40%, understanding the patterns of IYCF practices and the community-specific beliefs and attitudes that inform these will be essential.

Infant and Young Child Feeding

Infant and young child feeding encompasses all practices of feeding a child less than two years of age including breastfeeding, and complementary feeding (feeding of solid or semi-solid foods in addition to breast milk). The World Health Organization has established evidence-based guidelines for infant and young child feeding that include exclusive breastfeeding for the first six months of life, continued breastfeeding for up to two years of life, and introduction of a variety of adequate complementary foods at six months of age (7). Globally, from 1995-2010, estimates of IYCF practices in low- and middle-income countries indicate improvements have been made but progress varies significantly by region (8). Globally, less than half of children were exclusively breastfed for six months, and just half of all children continued to be breastfed at two years of age. Complementary feeding practices were similarly low, less than a third of children met minimum dietary diversity recommendations (9).

These IYCF behaviors are important components of efforts to improve child health because exclusive, and continued breastfeeding have the potential to improve nutrition and development status, reduce incidence of disease and decrease under-five mortality in low-resource settings (5). In addition, optimal complementary feeding allows children to build on the gains made through exclusive breastfeeding and plays a role in ensuring energy, macronutrient and micronutrient requirements are met (10, 11).

Exclusive and continued breastfeeding protects against illness by both limiting exposure to pathogens (12) and strengthening the immune system (13, 14). Breast milk is also an important source of nutrients and energy, particularly in low-resource settings (15, 16). Finally, breastfed children have been shown to have sustained improvements in cognitive and motor development (17-19).

Optimal complementary feeding should include an adequate variety of foods so that energy, macrontutrientand micronutrient requirements are met. Successful complementary feeding has been shown to reduce incidence of growth faltering (20), protect children from illness (21) speed recovery time (22-24) and improve undernutrition through feeding of energy-, macronutrient- and micronutrient-dense foods (25). Feeding a variety of complementary foods is an important component of achieving optimal complementary feeding and improved nutrition. In Ethiopia and Zambia, children with higher food diversity scores also had higher height-for-age and weight-for-age z-scores, two measures of nutritional status (26).

Recently, studies (5, 27) have shown that efforts to promote optimal infant and young child feeding practices are some of the most cost effective approaches to improving child nutrition specifically and reducing under-five mortality in general. Understanding community-specific determinants, beliefs and attitudes that drive IYCF decision making and practices will be crucial in efforts to improve child health and nutrition.

Aims and Objectives

Objectives

- This study's primary objective is to determine the prevalence of three IYCF behaviors (exclusive breastfeeding, continued breastfeeding, and diverse

complementary feeding) and to investigate the associations between individual level factors and optimal IYCF practices among women with children < 2 years of age in four departments in Haiti (Ouest, Sud-Est, Nippes and Artibonite) with data collected from a 2013 survey conducted in partnership with Emory University and UNICEF Haiti.

- This study's secondary objective is to understand mothers' beliefs and attitudes regarding exclusive and continued breastfeeding, and diverse complementary feeding among women with children < 2 years of age in four departments in Haiti (Ouest, Sud-Est, Nippes and Artibonite) with qualitative data collected in 2013 in partnership with Emory University and UNICEF Haiti.

Aims

- The findings from this study will contribute to a more in-depth understanding of the challenges and enablers to optimal exclusive and continued breastfeeding and complementary feeding diversity experienced by mothers in these communities
- The results will be used to inform future IYCF programmatic and communication activities in Haiti

Study Setting: Infant and Young Child Feeding in Haiti

As explained earlier, undernutrition contributes significantly to global child mortality. In Haiti, rates of infant and child mortality are the highest in the region (28). A recent nationally representative survey estimates that 22% of children in Haiti are malnourished, 8% show signs of severe chronic malnutrition and 5% show signs of acute undernutrition (29). Contributing to high rates of child mortality, and undernutrition is the lack of

sufficient water and sanitation services (28). This confluence of factors makes optimizing IYCF practices a particularly important goal in Haiti.

Previous studies in Haiti have primarily used data from nationally representative surveys to estimate nutritional status and prevalence of select IYCF practices (30-33). Others have focused on IYCF practices specifically among women affected and displaced following the 2010 earthquake (34, 35). This research builds on these earlier studies by taking a mixed-methods approach to estimate the prevalence of select IYCF practices in four departments in Haiti, and expand the breadth of our understanding of the factors that may determine optimal behaviors and the attitudes and beliefs that inform them.

CHAPTER 2: LITERATURE REVIEW

Infant and Young Child Feeding Worldwide

Adequate and appropriate nutrition during the first months and years of life is a crucial element to ensure optimal childhood health and development. Undernutrition is an underlying cause for 45% of the approximately 7 million child deaths in 2011(4). In the hopes of addressing this problem, a renewed focus has been placed on infant and young child feeding (IYFC) practices during the first two years of life. Following The Lancet's 2008 series on maternal and child undernutrition, the World Bank and International Monetary Fund released the policy brief "Scaling Up Nutrition: A Framework for Action" (3). This brief became the impetus for the SUN movement. Since 2010 both global and national actors have revised their nutrition strategies and we have seen an increase in national investment in nutrition on the part of low- and middle-income countries (36). This new movement focuses on country owned and led, multi-sectoral, evidence based solutions to maternal and child undernutrition (37).

The World Health Organization recommends that mothers initiate breastfeeding within the first hour of life, that infants be exclusively breastfed for the first six months of life, that complementary foods be added only after six months, and that breastfeeding continues for two years of age (7). Optimal breastfeeding practices play an essential role in IYCF recommendations. Early, exclusive, and continued breastfeeding has the potential to reduce incidence of disease, improve nutrition and development status, and reduce mortality of infants in low-resource settings (5). In addition to breastfeeding practices, appropriate complementary feeding is essential to the health of the child and can build on the gains made through early and exclusive breastfeeding (10, 11). In order to ensure that complementary foods are introduced appropriately and in a way that meets

the child's nutritional needs, special attention must be paid to ensure timely (at six months), adequate (sufficient energy, protein and micronutrient content), and safe (hygienically prepared and served) complementary feeding (7, 38).

Infectious Disease

Diarrheal disease, respiratory tract infections, and malaria are the leading causes of death for children under-five years of age (39). Children who are optimally breastfed (exclusively breastfed for six months and continually breastfed for up to two years) are less likely to experience diarrheal disease, respiratory tract infections, and malaria when compared to their non-breastfed counterparts (12, 40-42). Not only does breastfeeding reduce the incidence of these diseases, it also decreases the severity and duration of diarrheal disease (12). Studies (39, 40, 43) have shown that mortality due to diarrheal disease and acute respiratory infection can be reduced through optimal breastfeeding. In children less than six months of age, mortality due to diarrheal disease and acute respiratory infection for sub-optimally breastfed children was, respectively, 7.3 and 4.7 times that of infants who had been exclusively breastfed. This protective effect continues even after 6 months of age, when complementary foods are introduced (41, 43).

The protective effect of exclusive breastfeeding can be explained in two ways. First, infants and children who are breastfed may have less potential of exposure to food-borne pathogens through contaminated complementary foods and eating utensils (12). This effect may be particularly pronounced in areas where access to safe water is limited and hygienic practices surrounding hand washing and food preparation are uncommon. Second, breast milk has properties that prevent infection (13, 14). Anti-microbial and anti-inflammatory properties in breast milk such as transforming growth factor,

interleukin, erythropoietin, and lactoferrin, provide protection to the infant while his or her immune system is maturing (44-46). In addition to these protective agents, breast milk encourages immune development, and promotes tolerance, priming, and maturation of the immune system which may explain the benefits of breastfeeding seen even after weaning has occurred (44, 47).

In addition to the importance of breastfeeding, optimal complementary feeding practices have been shown to reduce incidence and severity of early childhood illnesses. Complementary feeding may be defined as the period of transition from exclusive breastfeeding to consumption of a wide-variety of foods (48). Ideally this period beings at six months, when complementary foods are first introduced, and continues until weaning occurs at twenty-four months or later. These eighteen plus months are a period of high risk for infection for infants and young children. As they become more mobile and begin consuming complementary foods the potential for pathogen exposure becomes higher (21). Diarrheal incidence typically peaks between six and eleven months of age (21), when children are first introduced to complementary foods, making proper introduction crucial.

In addition to protecting children from illness, optimal complementary feeding is an important component of illness recovery. Supplementary food rations and micronutrient supplementation has been shown to speed recovery from diarrheal disease and acute respiratory infections and encourage “catch-up” growth following illness related growth faltering (11, 22-24).

Nutrition

In 2011, more than three million children under-five years of age died as a result of undernutrition, that is nearly half of all child deaths (1). The relationship between nutrition and infection is bi-directional. Frequent illnesses can impair a child's nutritional status and poor nutritional status can lead to an increased risk of illness. While undernutrition is a complex problem with many facets, and thus many potential approaches to address it, the importance of breastfeeding to early childhood nutrition is clear (4, 5). Breastfeeding is the first and primary source of an infant's energy and nutrients. Exclusive and continued breastfeeding for at least two years of age is an important determinant of a child's nutrition status (15, 16). In many low-income settings, available complementary foods lack diversity and are of low quality. Breast milk, in contrast, provides important nutrients, in addition to immunological and growth factors that may be missing from solid or semi-solid foods (13, 44-47).

Until recently, it was thought that children who were breastfed for a longer duration had poorer nutritional status as measured by height-for-age and weight-for-height than their weaned counterparts (49, 50). These early findings led to the conclusion that continued breastfeeding depressed growth and that children should be weaned at twelve months. More recent studies, however, have found that this perceived relationship is due to reverse causality (15, 51). Mothers wait longer to wean children who were malnourished earlier in infancy. In fact, longer duration of breastfeeding has been shown to have a positive effect on linear growth even after a child has been weaned suggesting not just short-term benefits to breastfeeding but long-term nutritional gains (16).

The nutritional gains achieved through optimal breastfeeding can be built upon during the complementary feeding period. Between the ages of six and twelve months, infants are particularly vulnerable to growth faltering (20), micronutrient deficiencies, and infectious illnesses (52). In addition to these risks, infants and young children require energy- and nutrient-dense food because they have limited gastric capacity (25, 48). Studies have found that the nutrition density required by children during this complementary feeding period is often not met with typical household foods (25). Young children require foods that are more nutritionally dense than adults (53). As a result, young children should be given the most nutritionally valuable foods in the household but in many communities the opposite is practiced (11).

Optimal complementary feeding can be understood to include foods that are high in energy and macronutrients and those that deliver the required amount of various micronutrients. As infants age, complementary foods must fulfill a greater proportion of their energy requirements. In low-income settings complementary foods are expected to contribute 33%, 45%, and 61% of energy intake among children 6-8 months, 9-11 months, and 12-13 months respectively (54) while the micronutrient intake required from complementary foods may vary depending on the concentration of each nutrient in breast milk (52). The nutrients most often under-consumed are iron, zinc, and vitamin B6 (55). All of these components combine to make optimal complementary feeding essential to optimal nutrition.

Development

In addition to protection from disease and nutritional benefits, IYCF plays an important role in proper cognitive and motor-skills development in young children. Children who

are breastfed for a longer duration scored higher on IQ tests and other intelligence tests early in life; these gains appear magnified among low-birth-weight children (17, 19). Exclusive breastfeeding for six months and continued breastfeeding has also been shown to improve young children's motor development (18). These gains have not only been observed among young children; a longer duration of breastfeeding has been linked to increased IQ scores among adults as well, highlighting the possible long-term effects of optimal breastfeeding (56). Complementary feeding plays an important role in growth, muscle mass development, and cognitive function (57). In communities with less than optimal complementary feeding practices children are often micronutrient deficient particularly in B vitamins, calcium, iron, zinc and vitamin A which can contribute to significant developmental delays and deficits (58). Sufficient complementary feeding is particularly important in preventing developmental delays because after two years of age it is difficult to reverse the effects of malnutrition on growth and functional deficits (59).

Global Gains

In recent years, several attempts have been made to estimate possible reductions in under-five mortality given effective implementation of evidence-based health interventions; promotion of optimal breastfeeding and infant and young child feeding has consistently been identified as one of the most cost-effective strategies (27). Jones et. al projected that with universal coverage of exclusive breastfeeding for the first six months of life, 13% of all under-five deaths could be prevented, more than a million deaths each year, nearly twice the proportion of deaths preventable with the next most effective intervention. The same study also predicted that with universal optimal complementary feeding practices, 6% of under-five deaths could be prevented or more than half a million annually. A

separate study analyzing the cost-effectiveness of nutrition interventions in 34 countries (5) estimated the additional cost necessary to reach 90% coverage. Complementary feeding education and breastfeeding promotion had some of the lowest annual costs of the nutrition interventions, 269 million USD and 653 million USD respectively.

The effects of improved nutrition and IYCF go beyond survival. Poor nutrition in early years of life has been shown to retard economic and social development of individuals and entire communities. Length- and height-for-age Z scores have been shown to be a powerful indicator of a community's economic well-being (60). Improved IYCF practices could not only improve the health, nutritional status, and development of individuals but could, if taken to scale, affect the future of whole communities.

Infant and Young Child Feeding in Lower-Income Countries

Infant and young child feeding practices vary widely both within and across regions. To measure progress across the many components of recommended IYCF practices, the WHO has established a recommended set of IYCF indicators (61) (Table 1). Lutter et al. (9) examined these indicators for low-income countries at global and WHO regional levels and found that, in most regions, IYCF practices are sub-optimal.

Table 1. Eight Core recommended IYCF practices and their indicators (61)

Feeding practice	Indicator
Early initiation of breastfeeding	Proportion of children born in the last 24 months who were put to the breast within one hour of birth
Exclusive breastfeeding under 6 months	Proportion of infants 0-5 months of age who are fed exclusively with breast milk
Continued breastfeeding	Proportion of children 12-15 months of age who are fed breast milk
Introduction of solid, semi-solid or soft foods	Proportion of infants 6-8 months of age who receive solid, semi-solid or soft foods
Minimum dietary diversity	Proportion of children 6-23 months of age who receive foods from 4 or more food groups
Minimum meal frequency	Proportion of breastfed and non-breastfed children 6-23 months of age who receive solid, semi-solid, or soft foods the minimum number of times or more
Minimum acceptable diet	Proportion of children 6-23 months of age who receive a minimum acceptable diet (apart from breast milk)
Consumption of iron-rich or iron-fortified foods	Proportion of children 6-23 months of age who receive an iron-rich food or iron-fortified food that is specially designed for infants and young children, or that is fortified in the home

Globally, in lower-income countries, less than half of mothers initiated breastfeeding within one hour of life, just 36% of children were exclusively breastfed for six months, and only 50% of children continued to be breastfed at two years of age. Complementary feeding practices were similarly low, less than a third of children met minimum dietary diversity and just half achieved minimum meal frequency. Lutter and colleagues disaggregated estimates of IYCF practices among 147 countries by WHO region: Africa, Asia, Latin America and the Caribbean (LAC), and Other (i.e. Eastern Europe). In general, countries in the LAC region were more likely to follow recommended complementary feeding practices than Africa and Asia but were less likely to practice continued breastfeeding. Despite relatively high levels of appropriate complementary feeding in LAC countries, estimates of recommended practices remain sub-optimal with

less than half of all children attaining the minimum acceptable diet (an indicator that combines minimum dietary diversity and minimum meal frequency estimates).

Countries in the Africa and Other regions were least likely to practice age-appropriate breastfeeding (defined here as 6 months of exclusive breastfeeding, and complementary foods and continued breastfeeding for the first year). Just over 30% of children under six months of age in Africa were exclusively breastfed, this estimate drops to under 20% among children 4-5 months of age. Just 16% of children in the African region met the minimum acceptable diet criteria. While implementation of recommended practices varied by region, these estimates provide compelling evidence that IYCF practices are sub-optimal at both global and regional levels.

Arabi et al. (6) found similar results when comparing IYCF indicators across 28 low-income countries. The prevalence of exclusive breastfeeding across all countries was low, just 25%, but varied widely with just 5% prevalence in Côte d'Ivoire and 57% prevalence in Mongolia. Across all countries, continued breastfeeding through the first year of life was high, at 75% but differed drastically by country; 97% of mothers in Togo practiced continued breastfeeding compared to 20% in Belarus. Just over half of all children (52%) were introduced to complementary foods at six months again with wide variation between countries, 15% in Somalia and 95% in Belarus.

In addition to estimating the prevalence of recommended IYCF practices, Arabi and colleagues' study also examined the relationship between Human Development Index (HDI) scores and IYCF practices. The HDI was developed by the United Nations to measure the economic and social well-being of a country. The index combines measures such as GDP per capita, adult literacy rate, school enrollment rates, and life expectancy

into a holistic measure (62). A low-HDI score indicates that a country has a low level of social and/ or economic development for all or some of its population. Arabi and colleagues found that high HDI scores were not linked to improved IYCF practices in general, although a few specific IYCF practices improved with increases in HDI scores. This finding suggests that there are other factors that influence optimal IYCF practices apart from social and economic status and that addressing these factors may be necessary in order to improve IYCF behaviors.

Infant and Young Child Feeding in Haiti

Since the 1980's, Haiti has undergone rapid urbanization increasing pressure on limited water, sanitation and health resources. This pressure has been exacerbated in recent years following flooding and damage to infrastructure after a series of hurricanes in 2008 and a severe earthquake in 2010. Recent efforts to ameliorate the nutritional situation of children in Haiti have relied heavily on ready-to-use therapeutic and supplemental foods, particularly post-earthquake (63). Focus has often been placed on the medical model of treatment of moderate and severe malnutrition at the neglect of preventative measures. The United States Agency for International Development (USAID) provided IYCF programming to Haiti through their Infant Young Child Nutrition Project (2001-2011). This program, built on a prevention of mother-to-child transmission (PMTCT) platform, focused on offering counseling and support services to mothers (64). Recently, the Ministère de la Santé et de la Population, has demonstrated a renewed focus on IYCF and has included IYCF strategies in the Haitian National Nutrition Policy (65).

Results from past nationally representative Haiti Demographic and Health Surveys (HDHS) indicate that recommended breastfeeding practices are not widely implemented (Figure 1) (29, 66-68).

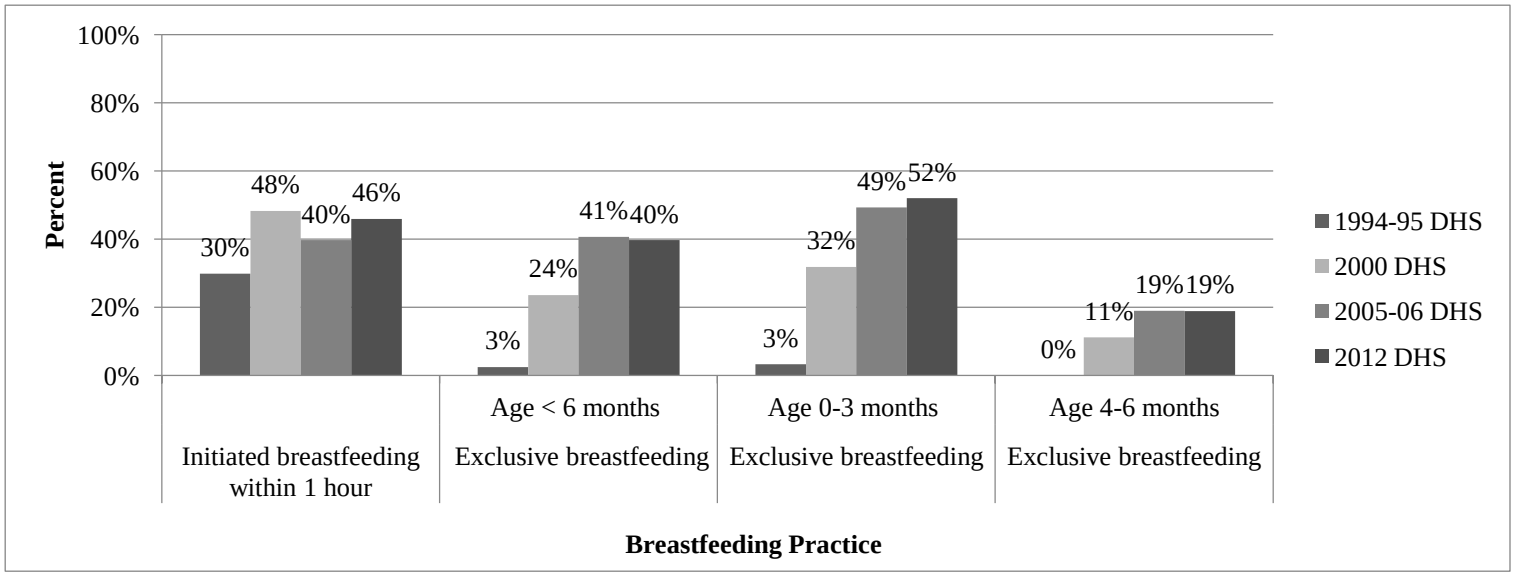

Figure 1. Prevalence of Breastfeeding Practices, Haiti (DHS 1994-95, 2000, 2005-06, 2012).

According to the most recent HDHS estimates, initiation of breastfeeding within the first hour of life is sub-optimal, with just under half (46%) of all women following this recommendation. Exclusive breastfeeding for six months is also low, just 19% of children 4-6 months are exclusively breastfed (29). Early mixed feeding (breastfeeding in addition to complementary foods and/or liquids) is common, with most mothers adding complementary foods before six months (32, 35, 69, 70). Mean duration of continued breastfeeding is 17 months while mean duration of exclusive breastfeeding is just 1.7 months. A 17% increase in exclusive breastfeeding among children less than six months and among children zero to three months was observed between 2000 and 2005/2006. These improvements appear to have stagnated with a 1% drop in exclusive breastfeeding

among children less than six months, just a 3% increase among children 0-3 months and no improvements among children 4-6 months. These indicators demonstrate that important breastfeeding practices are sub-optimal in Haiti, particularly early initiation of breastfeeding, exclusive breastfeeding, and continued breastfeeding. The HDHS has not consistently collected data on complementary feeding initiation, meal diversity, or frequency.

Little research has been done to better understand the knowledge, attitudes and beliefs that drive IYCF practices in Haiti. While the DHS collects data relevant to the prevalence of recommended breastfeeding practices in Haiti this information gives little insight into the attitudes and beliefs that motivate these and other complementary feeding practices. Alvarez's 1981 report (69), following many years of community observation, describes a system in which IYCF practices and decisions are made based on long-standing, traditional practices and beliefs about the relationship between the health of the mother and the quality of the breast milk. More recent studies have focused on the effect of emergencies on IYCF practices in Haiti, specifically the 2010 earthquake. Ayoya et al. demonstrated the success of UNICEF's baby-tents in encouraging exclusive breastfeeding in urban camps (34). The tents were established in five cities in Haiti with the majority in the capital, Port-au-Prince. Among enrolled infant and mother pairs the prevalence of exclusive breastfeeding for the first six months of age was 70%, much higher than the most recent estimates from HDHS 2012. In addition to a high prevalence of exclusive breastfeeding, 10% of enrolled mothers who originally practiced early mixed-feeding converted to exclusive breastfeeding. Despite efforts to estimate the prevalence of exclusive breastfeeding, results from the baby tents did not address

behaviors and beliefs that influence IYCF practices in the general population. Dörnemann et al. (35) described breastfeeding challenges mothers faced in post-earthquake Léogâne, the epicenter of the 2010 earthquake. Like Alvarez's earlier findings, Dörnemann concluded that mothers found following recommended breastfeeding practices challenging primarily due to lack of confidence in the quality of their breast milk and, in some cases, the introduction of formula substitutes.

Unlike messaging surrounding complementary feeding, there exists a relatively simple, single message surrounding exclusive breastfeeding: breastfeed exclusively until six months of age (7). The fact that this exclusive breastfeeding recommendation is not widely practiced in Haiti suggests that there are real and perceived barriers to implementation that must be understood and addressed in order to reach optimal levels of recommended IYCF practices. There is no single message that can address all the recommended complementary feeding practices which include timing, sanitation, preparation, and quality (71). Difficulties implementing optimal complementary feeding practices suggests that special attention must be devoted to the complex messaging, and that specific recommendations ought to be tailored to the specific community context.

Importance of Infant and Young Child Feeding in Haiti

Haiti has struggled to reduce its high rates of infant and child mortality. Under-five mortality rates fell drastically until 2000 and have since stagnated (29). Despite seeing a reduction in infant mortality in rural areas, urban areas have seen an increase over the last decade. Under-five mortality in rural areas fell from 114 per every 1,000 live births in 2005-2006 to 88 in 2012 but rose from 78 deaths to 99 deaths in urban areas according to HDHS 2012 estimates. This may be due to rapid urbanization. In 2006 less than half,

45.66%, of the population lived in urban areas compared to 54.65% in 2012 (72). UNICEF's most recent State of the World's Children report ranked Haiti seventh highest out of 193 countries in under-five mortality (28). Haiti was the only country in the Central and South American region that was among the top 30. Similar to global trends, leading causes of under-five mortality in Haiti include acute lower respiratory infection and diarrheal disease (73).

Contributing to Haiti's high infant and child mortality are a high prevalence of undernutrition, limited access to safe water, and poor sanitation. In Haiti, a little more than one fifth of children under-five suffer from malnutrition (22%) as measured by a height-for-age z-score two or more standard deviations below the mean (29). Severe chronic malnutrition is also a problem; 8% of children had a height-for-age z-score three or more standard deviations below the mean. The prevalence of wasting (weight-for-height) is somewhat high, 5% of children under-five had a weight-for-height z-score two or more standard deviations below the mean. Wasting is an indicator of acute undernutrition and is caused by recent and often severe weight loss. Prevalence of wasting above 5% usually indicates a severe food shortage, and so indicates that sub-optimal IYCF may be affected by a lack of access to complementary foods (74).

In many communities, poor nutrition is compounded by a lack of safe water and sanitation facilities. Just 63% of Haitians have access to an improved drinking water source and only 17% of the population uses an improved sanitation facility (28). All of these factors combined make attention to improved IYCF practices in Haiti essential.

CHAPTER 3: MANUSCRIPT

Infant and Young Child Feeding in Four Departments in Haiti: A Mixed-method Study of Practices, Determinants, Attitudes, and Beliefs

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STUDENT CONTRIBUTION: The student designed the study protocol, obtained Institutional Review Board approval for its conduct, led the research team that gathered the data, analyzed the data, and wrote the first draft of the manuscript including all tables.

ABSTRACT:

Objectives: Although breastfeeding is near universal in Haiti, sub-optimal complementary feeding practices have been observed and documented. The objective of this study was to determine the prevalence and patterns of exclusive breastfeeding (EBF), continued breastfeeding (CBF) and diverse complementary feeding among children less than 24 mo in four regions in Haiti. This study also aims to identify attitudes and beliefs that inform these behaviors and identify factors associated with these recommended practices.

Methods: This study utilized a mixed-methods approach consisting of a cross-sectional survey of 310 women and 12 focus group discussions among women with children ≤ 2 y of age. Multivariable logistic regression analyses were conducted to identify factors associated with EBF for the first 6 mo of life, CBF for ≥ 2 y of age, and receipt of a diverse variety of complementary foods. Qualitative data were recorded, transcribed verbatim and analyzed for common themes.

Results: The prevalence of EBF, CBF, and achievement of minimum dietary diversity (MDD) was 57%, 11.9% and 21.2%, respectively. EBF was statistically significantly associated with infant's age when controlling for annual household income, location of most recent birth, or receipt of continued-breastfeeding counseling [OR=0.67 (95% CI: 1.10-16.60)]. CBF was not statistically significantly associated with rural place of residence, receipt of continued breastfeeding counseling, parity, or infant's age. Meeting MDD was not significantly associated with parity, receipt of postnatal care, rural place of residence, location of most recent birth, receipt of IYCF counseling, or level of schooling attended. Beliefs surrounding the relationship between the mother's health and her diet

on the quality of breastmilk may prohibit EBF and CBF. Qualitative data revealed that dietary diversity may be low because mothers often struggle to introduce complementary foods and those that are traditionally introduced are not varied and primarily consist of grains and starches.

Conclusions: The practice of the three recommended IYCF practices examined in this study is sub-optimal, particularly CBF and achievement of MDD. Future communication and programming efforts should address the misunderstandings and concerns identified through qualitative methods.

KEY WORDS: nutrition, infant and young child feeding, breastfeeding, exclusive breastfeeding, continued breastfeeding, complementary feeding, dietary diversity, Haiti

INTRODUCTION:

Adequate and appropriate nutrition during the first months and years of life is a crucial element to ensure child health. To promote optimal infant and young child feeding (IYCF) the World Health Organization (WHO) recommends that infants be exclusively breastfed for the first 6 mo of life, that diverse complementary foods be introduced only > 6 mo, and that breastfeeding continues for ≥ 2 y (1). Early, exclusive, and continued breastfeeding have the potential to reduce disease incidence, improve nutrition and development status, and reduce infant mortality in low-resource settings (2). Further, breastfeeding promotion is the most effective intervention to prevent under-five mortality (3). In addition to breastfeeding practices, appropriate complementary feeding is essential to the health of the child and can build on the gains made through early and exclusive breastfeeding (4, 5).

Haiti has struggled to reduce its high child mortality rates. Under-five mortality rates fell drastically until 2000 and have since stagnated (6). Recently Haiti ranked seventh highest out of 193 countries in under-five mortality (7). Contributing to Haiti's high child mortality are a high prevalence of undernutrition, limited access to safe water, and poor sanitation. In Haiti, > 20% of children < 5 suffer from chronic malnutrition (22%) as measured by a height-for-age z-score ≥ 2 SD below the median (6). Severe chronic malnutrition is also a problem; 8% of children had a height-for-age z-score ≥ 3 SD below the median. As a result, efforts to improve IYCF practices have been a priority of Haiti's Ministère de la Santé Publique et de la Population (MSPP) and have been emphasized in the Haitian National Nutrition Policy (8).

Little mixed-methods research has been conducted to better understand the prevalence, determinants and beliefs surrounding IYCF practices in Haiti. Heidkamp et al. estimated the prevalence of exclusive breastfeeding (EBF) and minimum dietary diversity (MDD) and determinants of each using multivariable regression but did not attempt to explain their findings using qualitative methods (9, 10). Dörnemann et al. conducted a mixed-method study to evaluate the effect of the 2010 earthquake on IYCF practices but did not utilize multivariable regression techniques to identify possible determinants of key practices (11). Alvarez's 1981 report describes a system in which IYCF practices and decisions are made based on long-standing, traditional practices and beliefs about the relationship between the health of the mother and breastmilk quality (12). Understanding not only the prevalence of key practices but these long-standing beliefs that influence them is important as Haiti aims to reduce child malnutrition through improved IYCF.

The objectives of this analysis are to describe the prevalence and determinants of three recommended IYCF practices: EBF, continued breastfeeding (CBF), and MDD. This study also aims to use qualitative methods to identify beliefs and attitudes associated with each practice that may facilitate or act as barriers to implementation.

METHODS:

Study Design

The study took place in four Haitian departments: Ouest, Artibonite, Sud-Est, and Nippes. These were chosen at the direction of the MSPP and UNICEF Haiti due to previously low EBF levels (6).This study was reviewed by Emory University's

Institutional Review Board(IRB00065278) and was determined to meet the exemption criteria. The study utilized a mixed-methods, triangulation approach (13).

The quantitative component consisted of a cross-sectional survey that assessed IYCF knowledge, attitudes, and practices from women ≥ 18 y with children < 2 y. The qualitative component included focus group discussions with mothers of children < 2 y. Group discussions, as opposed to individual interviews, were chosen because the group context often results in a wider range of collected information, building on common experiences and social norms (14).

Sampling Procedure

The survey aimed to be representative of the four departments taken together and not of the departments individually. The sample size (n=310) was calculated using expected EBF prevalence of 24.1% at 6 mo (6) and a desired 5% precision.

Cluster Selection

A one-stage cluster design was used (15). Sections d'Enumération (SDE), created by the Institut Haïtien de Statistique et d'Information (IHSI) for use in the 2003 national census, were used as the primary sampling unit or cluster (16). Using Population Proportional to Size (PPS) sampling, 33 SDE were randomly selected. The PPS procedure allows for the number of selected SDE in each department to be proportional to the population size of each department (15). Thirty-one SDE were surveyed for a sample size of 310 participants.

Household Selection

Because accurate maps of all households within each chosen SDE were not available and mapping of all households prior to arrival in each SDE was not feasible, the Expanded

Programme on Immunization (EPI) method of household selection was used (17). Only one respondent per household was permitted to participate in the survey.

Focus Group Participant Recruitment

The study's qualitative component consisted of 12 focus group discussions with 4-14 participants in each discussion. Participants were recruited from survey subjects in each SDE using a convenience sample. However, unlike the survey component which allowed for only one respondent per household, women from the same households were encouraged to participate in the discussions. Discussions were typically held in a local school or church, conducted in Creole and led by a moderator trained for this study.

Data Collection

Data were collected between June 13-July 14, 2013. The survey and qualitative data collection was conducted by a team of 3 field-workers and 1 supervisor. A pre-test of the questionnaire and household selection method was performed in a reserve SDE selected for that purpose. As a result, minor changes in the questionnaire wording were made to improve clarity.

Data Entry and Analysis

Quantitative data were checked for completeness and inconsistencies, entered, coded and cleaned using Epi Info™ version 3.5.1 (18) and analyzed using STATA/ SE version 13.1 (19). Descriptive statistics were computed to determine the prevalence of various IYCF indicators based on international guidelines (20, 21). Infants ≤ 6 mo who were fed no other liquids or solids apart from breastmilk the day preceding the survey were categorized as EBF (20). Among children 20-24 mo, those who breastfed the day preceding the survey were classified as practicing CBF (21). Dietary diversity scores

were calculated among children 6-24 mo based on consumption of foods from seven food groups (20). Those who consumed food from ≥ 4 food groups were categorized as having achieved MDD. Data were also collected on the following independent variables: maternal household income, education, place of residence, parity, location and type of attendance at most recent birth, and receipt of postnatal care and IYCF messages. To identify variables potentially associated with the outcome variables (EBF, CBF, MDD), bivariate analyses were conducted between all independent variables and each outcome variable. All independent variables with a *t*-test or chi-square p-value ≤ 0.2 were examined for co-linearity using Spearman's correlation. If independent variables were found to be highly correlated (p-value ≤ 0.05), only one was selected for inclusion in the multivariable model. To identify independent variables associated with each outcome three multivariable logistic regression models were constructed.

The qualitative data were recorded in Haitian Creole and transcribed into French for analysis. The transcribed data were read carefully and categorized into a thematic framework, created prior to data collection and used to inform the discussion guide, using MAXQDA™ software (22). The data were then summarized by thematic area and presented alongside quantitative data as a means of triangulation. Quotations were presented verbatim as illustrations of common themes and ideas.

RESULTS:

Description of study participants

All 31 SDE surveyed were included in data analysis (30 included in the sample and one used for the pre-test). The data from the pre-test were included because no questions were added or deleted following the pre-test and changes consisted of minor word changes. A

total of 310 women were surveyed. Based on experiences from previous surveys in this population (23), maternal age was measured in 4-y intervals to avoid misreporting of age and age heaping. The majority of participants (72.5%) were between 18-31 y (Table 1). The mean age of the youngest child was 11.4 mo and the mean number of births was 2.5. Maternal educational status was spread among those who completed no formal education (18.4%), those who completed primary school (39.7%), and those who completed secondary school (37.1%). Most (61%) of women's most recent birth was attended either by a physician (39.4%) or a nurse (19.7%). Most recent births occurred in a public hospital (46.1%) or in either the participant's or a family member's home (38.7%).

Prevalence of recommended IYCF behaviors

Breastfeeding was nearly universal. Most women surveyed (94.8%) reported having breastfed their most recent child at least once. Despite near universal breastfeeding, practices of other optimal IYCF behaviors varied (Table 2). More than half (57%) of children < 6 mo were EBF the day preceding the survey however, EBF prevalence falls to 44.1% among children 4- 5 mo. Following EBF, at 6 mo, it is recommended that children are introduced to complementary foods. Among women with children 9-24 mo, nearly half (49.7%) reported initiating complementary foods between 6-9 mo. In addition to timely introduction, nutrient-rich and diverse complementary foods are recommended. Based on data collected about foods and liquids consumed during the 24 h preceding the survey, 21.2% of children ≥ 6 mo met the MDD standard of foods from ≥ 4 food groups consumed. CBF for ≥ 24 mo is recommended to supplement complementary foods. The majority of women do not continue breastfeeding until 24 mo; only 11.9% of children 20-24 mo were breastfed the day preceding the survey.

Exclusive breastfeeding: Determinants, attitudes and beliefs

When controlling for annual household income, location of most recent birth, and receipt of CBF counseling, younger infants were more likely to be EBF [OR=0.67 (95% CI: 1.10-16.60)] (Table 3). Qualitative findings suggest that two primary challenges exist that prevent women from practicing EBF for the optimal duration and instead often practice early mixed feeding. The first is the belief that it is necessary to administer a purgative in the first few days of life. The second is the understanding that a mother's breastmilk may become unsuitable in some circumstances and that, as a result, she may be required to introduce complementary foods before 6 mo.

Within the first 3 d of life, 23.9% of infants received a liquid other than breastmilk. Purgative or "manje kabann" was the most common of these liquids; it is typically prepared with castor oil, water, nutmeg and sugar. To explain how and why a purgative is administered a woman stated *"to clean the child's body. It has, excuse me, a black tar on the inside. After we wash the castor-oil plant we make the oil then we boil it with alcohol, sugar, and we give it and it cleans. It is in this way that we prepare 'lok de la muscade' [nutmeg purgative]"* [Sud-Est].

The more widespread belief that influences EBF practices is the understanding that a mother's health, both physical and mental, can impact the quality of her breastmilk. The superior quality of breastmilk and its value are widely appreciated as one mother stated, "*breastmilk has vitamins, it is the best of all the milks"* [Artibonite]. Another added that *"breastmilk is restorative for the child. We say that breastmilk is a treasure"* [Artibonite].

Despite the belief that breastmilk is superior to other milks and foods, women stated that if their milk became weak or dirty they were obligated to stop breastfeeding or introduce complementary foods. Milk becomes weak if a mother has not eaten well. One mother expresses this belief, "*I feel that [if] I haven't eaten well and that my milk has become too weak for the child*" [Artibonite]. A mother explained, *"If you practice exclusive breastfeeding you must be well fed. If you are not well fed the child won't find anything in the breast, the child will find nothing in the breast, the milk is like water, it can't do anything for the child. We can give him the milk and he cries nonstop, that is to say the milk can't do anything for him"* [Artibonite].

While women believe milk becomes weak with poor diet, it is believed that it becomes dirty as a result of illness. Dirty milk is thought to lead to infant mortality *"if the mother has had a first child and that one died and the second one as well, then the mother has a problem with her milk…the milk is dirty"* [Artibonite]. In addition to physical illness, psychological distress, anger and stress are believed to spoil the milk. Among survey respondents, 38.8% and 35.2% felt that if a woman was stressed or upset, respectively, she should not breastfeed. A participant explained "*the child will drink bad milk because when she [the mother] is mad the milk won't be good*" [Artibonite]. This idea is related to a mother's "bad blood" which is believed to be passed to the child through breastmilk and cause itching and sores.

Continued breastfeeding: Determinants, attitudes and beliefs

Rural place of residence, receipt of CBF counseling, parity, and infant's age were not statistically significantly associated with CBF (Table 4).

As with EBF, maternal diet and health (both physical and psychological) affect a mother's ability to practice CBF. Few mothers reported having received information about the optimal breastfeeding duration: just 25% of survey respondents compared to 89% who reported received counseling on optimal EBF duration. During focus group discussions, most mothers recommended weaning at 1 y or 18 mo. Mothers stated that one must "*stop breastfeeding for the parasites, the child has breastfed too much and one must take it [the breast] away"* [Artibonite]. It is believed that children who are breastfed past 1 y or 18 mo will be susceptible to viruses and parasites. Mothers' decision to wean (discontinue breastfeeding entirely), however, is linked with wealth. One mother stated *"I didn't have the means, I breast fed them [her children] for two years"* [Artibonite]. Mothers believe that weaning before two years of age is best but only if they feel they are able to provide enough solid foods to replace the milk.

Minimum Dietary Diversity: Determinants, attitudes and beliefs

Meeting MDD was not statistically significantly associated with parity, receipt of maternal postnatal care, rural place of residence, location of most recent birth, receipt of IYCF counseling following the most recent birth or school level attended (Table 5).

Qualitative findings indicate that mothers often have trouble introducing complementary foods successfully. *"I have my child, he doesn't want to eat, he prefers the breast and so I give it to him. It wasn't until 12 months of age that I gave him things to eat"* [Artibonite]. Focus group discussions also indicate that there are foods that are seen as inappropriate for young children. A mother explained, "*when the child begins to eat foods you must give them light foods because the child just started to stop exclusively breastfeeding…during this time you can't boil the banana for the child, no rice, no yams*"

[Aritibonite]. When introducing complementary foods, most women begin with porridges made from various flours or starches mixed with fresh or powdered milk or water and often sugar and cinnamon. A prepackaged, vitamin-enriched pudding, "Nourisoy", is often purchased, however, "*not everyone has the financial means to give their children Nourisoy*" [Artibonite]. In lieu of Nourisoy, women often use inexpensive, packaged crackers as the base for this porridge. A local banana variety that "*we put in the sun and then pound the banana so that it will become a flour to give to the child… for the gas and to help the child to grow*" [Sud-Est] is also used. A starch, typically created from cassava, is also a common complementary food as it "*serves as a refreshment, it is good for the insides of children…it cleans them"* [Ouest].

DISCUSSION:

This study is unique in Haiti in that it applies both multi-variable logistic regression analysis and qualitative methods. We assessed the prevalence of three key IYCF behaviors (exclusive breastfeeding, continued breastfeeding and complementary food diversity), factors associated with them using quantitative methods, and the attitudes and beliefs surrounding these practices using qualitative methods. Prevalence of EBF, CBF and achieved MDD were 57%, 11.9% and 21.2%, respectively. Multivariable regression analysis showed that infant's age was statistically significantly associated with EBF while no statistically significant determinants were identified for CBF or MDD achievement.

Qualitative data identified several beliefs that may limit implementation of optimal IYCF practices. Women in some communities feel it is necessary to administer purgatives shortly after birth to cleanse the child's body. A mother's diet and health are believed to

be closely linked to the quality of her breastmilk. A poor diet is believed to weaken breastmilk so that it is no longer sufficient or satisfying. Illness is thought to turn breastmilk dirty, making it unsafe for the child. In addition to these beliefs about breastmilk, women also view CBF as a possible risk for virus or parasitic infections among older children; thus earlier weaning is preferred. MDD achievement appears limited by difficulties mothers experience when introducing complementary foods, and the low diversity of traditional, grain-based complementary foods.

Strengthens and Weaknesses of the Study

This study's strengths lie in the study population and in the mixed-methods approach. This approach allowed quantitative results to be explained through qualitative methods and lead to a more in-depth understanding of the beliefs and attitudes that influence IYCF practices in Haiti. To our knowledge, there are no previous studies that combine both multivariate logistic regression methods to identify determinants of IYCF practices with qualitative methods among the general Haitian population.

Despite the strengths of this study, there are some weaknesses that must be acknowledged. The cluster sampling was conducted using extrapolation from the most recent 2003 census data and may not represent the population-distribution changes over the last ten years, in particular the movements as a result of the 2010 earthquake (16). The narrow age ranges used to calculate each outcome indicator limited the power to detect statistically significant associations when creating a logistic model.

Comparison of Results

Previous IYCF studies conducted in Haiti have primarily used large, nationally representative surveys. Heidkamp et al. (9) examined trends in EBF using data from three

recent Demographic and Health Surveys (DHS). EBF among children 0-6 mo increased from 1.1% in 1995-1996 to 41.2% in 2005-2006. The most recent DHS estimates EBF prevalence at 39.7%, a slight decrease since 2005-2006.With a sample size of n=79, our study estimated a 57% prevalence, higher than the 2012 DHS estimates but in-line with recently observed trends of increased EBF in Haiti (6, 24-26). As WHO et al. noted (20), this indicator may be particularly susceptible to small sample sizes because of the narrow age ranges used in both the denominator and numerator. This indicator often overestimates the proportion of children who are EBF because some children who are no longer EBF may not have received liquids other than breastmilk the previous day and thus be classified as EBF (20). In addition to prevalence, Heidkamp and colleagues (9) used multivariable regression methods to identify determinants of EBF. They found that child's age and department were significant predictors of EBF. While we also found infant's age to be a significant predictor, our intention was not to have data representative at the department level thus we did not evaluate the relationship between the department and outcome variables.

Lutter et al. (27) estimated changes in breastfeeding duration in eight Latin American and Caribbean (LAC) countries. They found that mean breastfeeding duration had increased in all countries except Haiti where it had fallen from 19.4 mo in 1995 to 18.2 mo in 2005. Estimates from the 2012 DHS (6) of CBF among children 20-24 mo was 30.8%, higher than our estimate of 11.9%. Lutter and colleagues found that, in LAC, changes in breastfeeding duration varied by socio-demographic characteristics; rural, uneducated women were more likely to experience only small increases or declines in breastfeeding

duration. We found that rural place of residence, parity, infant's age and receipt of breastfeeding counseling were not significantly associated with CBF.

In a second analysis of Haiti DHS data from 2005-2006, Heidkamp et al. (10) examined complementary feeding practices including MDD. They found 29.2% of children 6-24 mo achieved MDD. This is comparable to our finding of 21.2%. Heidkamp et al. identified increased child age, wealth, maternal overweight, and department of residence as significant predictors of achieving MDD. Our results did not identify these, or other, predictors as significant determinants.

Qualitative findings were consistent with Dörnemann and Kelly's study (11) of breastfeeding practices in a post-earthquake area of Haiti, Léogâne, where we also sampled one SDE. Specific beliefs related to diet, illness, psycho-social state, and pregnancy status of the mother appear to be barriers to CBF and optimal EBF. Like Dörnemann and Kelly, we found that "eating well" was seen as a requirement to ensure good-quality breastmilk. If a mother's diet or health is compromised her breastmilk is believed to become spoiled or weak. Alvarez and Murray (12) hypothesized that this concept of "spoiled milk" was developed to serve as an excuse to rely more heavily on supplementation or early weaning despite firm believes in breastmilk's superiority. In addition to these barriers we, like Dörnemann et al., found that effective CBF is limited by the belief that CBF beyond 12 or 18 mo can cause the child to become ill with virus or parasites (11). Women also appear to view CBF as a last resort, something that is done only if complementary foods are not available or affordable.

Conclusions

Despite the sub-optimal prevalence of some IYCF practices, some components of prior IYCF education and counseling have been effective in increasing knowledge and changing attitudes among this population. Many women made references to former practices such as administration of a purgative shortly after birth, and throwing away colostrum that are no longer practiced following receipt of counseling. Women have a good understanding of the importance and value of breastmilk and understand recommendations concerning EBF.

Continued promotion of recommended IYCF practices, and adaptation of messaging to address common misunderstandings and concerns identified by this study and others are crucial. Women rarely reported receiving counseling information from midwives or traditional practitioners and while many were aware of recommendations surrounding EBF duration few knew that CBF was recommended for up to two years. Messaging about CBF and appropriate complementary feeding, in addition to EBF, must be improved. Efforts to engage traditional practitioners and midwives may have significant impact as 37.7% of survey respondents most recently gave birth at home.

REFERENCES

1. World Health Organization, UNICEF. Global strategy for infant and young child feeding Geneva, Switzerland World Health Organization. 2003.
2. Bhutta ZA, Das JK, Rizvi A, Gaffey MF, Walker N, Horton S, et al. Evidence-based interventions for improvement of maternal and child nutrition: what can be done and at what cost? Lancet. 2013;382(9890):452-77.
3. Jones G, Steketee RW, Black RE, Bhutta ZA, Morris SS. How many child deaths can we prevent this year? Lancet. 2003;362(9377):65-71.
4. Dewey KG, Huffman SL. Maternal, infant, and young child nutrition: combining efforts to maximize impacts on child growth and micronutrient status. Food and Nutrition Bulletin. 2009;30(2 Suppl):S187-9.
5. Dewey KG, Mayers DR. Early child growth: how do nutrition and infection interact? Maternal and Child Nutrition. 2011;7 Suppl 3:129-42.
6. Cayemittes M, Basangu M, Bizimana J, Barrere B, Sévère B, Cayemittes V, et al. Enquete mortalité, morbidité et utlisation des services, Haiti, 2012. Calverton, Maryland, USA: MSPP, IHE, ICF International 2013.
7. United Nations Children's Fund (UNICEF). The state of the world's children 2012. New York, NY 2012.
8. Ministère de la Santé Publique et de la Population Unité de Coordination du Programme National d'Alimentation et de Nutrition. Politique Nationale de Nutrition. Port-au-Prince, Haiti: Ministère de la Santé Publique et de la Population 2012.
9. Heidkamp R, Ayoya MA, Teta IN, Stoltzfus RJ, Marhone JP. Breastfeeding practices and child growth outcomes in Haiti: an analysis of data from Demographic and Health Surveys. Maternal and Child Nutrition [Internet]. 2013 Aug 18.
10. Heidkamp RA, Ayoya MA, Teta IN, Stoltzfus RJ, Marhone JP. Complementary feeding practices and child growth outcomes in Haiti: an analysis of data from Demographic and Health Surveys. Maternal and Child Nutrition [Internet]. 2013 Oct 7.
11. Dörnemann J, Kelly AH. 'It is me who eats, to nourish him': a mixed-method study of breastfeeding in post-earthquake Haiti. Maternal and Child Nutrition. 2013;9(1):74-89.
12. Alvarez M, Murray G. Socialization for scarcity: Child feeding beliefs and practices in a Haitian village. United States Agency for International Development 1981 August 28, 1981. Report No.: 036110.
13. Creswell J. Designing and conducting mixed methods research. Thousand Oaks, California: SAGE Publications; 2007.
14. Hennick M. International focus group research: A handbook for health and social sciences. New York: Cambridge University Press; 2007.
15. Fowler F. Survey research methods. 3rd ed: SAGE Publications; 2008.
16. Institut Haitien de Statistique et d'Informatique Recensement general de la population et de l'habitat de 2003. Port-au-Prince, Haiti: 2003.
17. World Health Organization. The EPI coverage survey: Training for mid-level managers. Geneva, Switzerland: World Health Organization 1991.
18. Centers for Disease Control and Prevention. Epi Info 3.4.3. 2007.
19. StataCorp. College Station, TX: StataCorp LP; 2013.
20. WHO,USAID, UNICEF, AED, University of California Davis, International Food Policy Research Institute. Indicators for assessing infant and young child feeding practices: Conclusions

of a consensus meeting held 6-8 November 2007 in Washington D.C., USA. 2007 2008. Report No.: 978 92 4 159666 4.
21. Pan American Health Organization, UNICEF. ProPAN: Process for the promotion of child feeding Washington, D.C. : Pan American Health Organization, 2013.
22. VERBI Software - Consult - Sozialforschung GmbH. MAXQDA, software for qualitative data analysis. Berlin, Germany1989-2014.
23. Action Contre la Faim. Conducting KAP surveys: A learning document based on KAP failures. Action Contre La Faim, 2013.
24. Cayemittes M. Enquete mortalité, mobidité et utilisation des services (EMMUS-III), Haiti 2000. Pétionville, Haiti, Institut haitien de l'enfance, Calverton, Maryland CORC Macro: 2001.
25. Cayemittes M, Institute Haitien de l'Enfance, Macro International, Institute for Resource Development. Enquete mortalité, morbidité et utilisation des services (EMMUS-II): Haiti, 1994-95. Petionville, Haiti and Calveton, MD: 1995.
26. Cayemittes M, Placide MF, Mariko S, Barrere B, Severe B, Alexandre C. Enquete mortalité, morbidité et utilisation des services (EMMUS-IV): Haiti, 2005-2006. Calverton, MD, USA Ministere de la Sante Publique et de la Population, Institut Haitien de l'Enfance, Macro International 2007.
27. Lutter CK, Chaparro CM, Grummer-Strawn LM. Increases in breastfeeding in Latin America and the Caribbean: an analysis of equity. Health Policy and Planning. 2011;26(3):257-65.

Table 1. Socio-Demographic and Economic Characteristics of Women With Infants < 2 y in Ouest, Nippes, Sud-Est, and Artibonite, Haiti, 2013 n=310

Characteristic	Result
Department, % (n)	
Ouest	64.5% (200)
Artibonite	22.6% (70)
Nippes	6.5% (20)
Sud-Est	6.5% (20)
Place of Residence, % (n)	
Urban	51.6% (160)
Rural	48.4% (150)
Maternal Age, % (n)	
18-22 y	18.8% (58)
23-27 y	28.8% (89)
28-31 y	24.9% (77)
32-36 y	14.2% (44)
37-42 y	9.4% (29)
43-47 y	2.9% (9)
48-52 y	0.6% (2)
Missing	0.6% (2)
Age of Youngest Child (mo), mean (SD)	11.4 (7.0)
Parity, mean (SD)	2.5 (1.8)
Education Level Completed, % (n)	
None	18.4% (57)
Primary	39.7% (123)
Secondary	37.1% (115)
Higher	4.8% (15)
Missing	0.6 (2)
Employed Outside the Home, % (n)	12.3% (38)
Hours Worked Outside the Home Each Day, % (n)	
1-3 h	15.8% (6)
3.1-6 h	31.6% (12)

Table 1. Socio-Demographic and Economic Characteristics of Women With Infants < 2 y in Ouest, Nippes, Sud-Est, and Artibonite, Haiti, 2013 n=310

Characteristic	Result
6.1-9 h	26.3% (10)
9.1-12 h	26.3% (10)
Annual Household Income in Haitian Gourde[a], % (n)	
<13 500	51% (158)
13 500-27 000	21% (65)
>27 000-40 500	9.0% (28)
>40 500	9.7% (30)
Don't Know	9.4% (29)
Attendant at Most Recent Birth, % (n)	
Doctor	39.4% (122)
Nurse	19.7% (61)
Mid-wife	18.7% (58)
Traditional Healer	10.7% (33)
Traditional Birth Attendant (qualified)	3.9% (12)
No one	4.8% (15)
Family / Friend	2.3% (7)
Traditional Birth Attendant (non-qualified)	0.3% (1)
Other	0.3% (1)
Location of Most Recent Birth Binary, % (n)	
Facility	61.3% (190)
Home	38.7% (120)
Location of Most Recent Birth, % (n)	
Public Hospital	46.1% (143)
Home	38.7% (120)
Private Hospital	5.2% (16)
Public Health Center	4.2% (13)
Other	3.9%(12)
Public Maternity Ward	1.9% (6)

[a.] The exchange rate on June, 13th 2013 (the first day of data collection) was 43.20 Haitian Gourde per US dollar

Table 2. Ideal and Current Infant and Young Child Feeding Practices by Indicator[a] for Women With Infants < 2 y in Ouest, Nippes, Sud-Est, and Artibonite, Haiti, 2013 n=310

Ideal Practice	Indicator	Current Practice (%)	n
All infants breastfed for first time within 1 h of birth	% of children 0-24 months breastfed for first time within 1 h of birth	44.5%	310
All infants not fed anything other than breastmilk during the first 3 d of life	% of children 0-24 months not fed anything other than breastmilk during first 3 d of life	75.8%	310
All infants fed colostrum	% of children 0-24 mo old fed colostrum	88.1%	310
All infants and young children breastfed on demand, day and night	% of children 0-24 mo breastfed on demand	90.9%	209
All infants less than 6 mo exclusively breastfed	% of children 0-6 mo who consumed breastmilk but no water, other liquids, or foods the previous day	57%	79
	% of children 0-1 mo who consumed breastmilk but no water, other liquids, or foods the previous day	80%	20
	% of children 2-3 mo who consumed breastmilk but no water, other liquids, or foods the previous day	56%	25
	% of children 4-5 mo who consumed breastmilk but no water, other liquids, or foods the previous day	44.1%	34
	% of children 0-3 mo who consumed breastmilk but no water, other liquids, or foods the previous day	66.7%	45
All infants fed semi-solid complementary foods at the age of 6 mo	% of children 9-24 mo who began complementary feeding with solid foods or semi-solid food between 6-9 mo	49.7%	183
All children 6-24 mo achieve minimum dietary diversity [b]	% of children 6-24 mo of age who receive foods from ≥ 4 food groups	21.2%	231
	% of children 6-11 mo of age who receive foods from ≥ 4 food groups	17.1%	82
	% of children 12-17 months of age who receive foods from ≥ 4 food groups	21.3%	75
	% of children 18-24 mo of age who receive foods from ≥ 4 food groups	25.7%	74
All children breastfed through the age of 2 y or older	% of children 20-24 mo breastfed the previous day	11.9%	42

[a.] All indicators adapted from Process for the Promotion of Child Feeding ProPAN Field Manual Table 1 (21)

[b.] This indicator is adopted from the World Health Organization's Indicators for Assessing Infant and Young Child Feeding Practices (20)

Table 3. Multivariable Logistic Regression Showing Determinants of Exclusive Breastfeeding [a] Among Infants < 6 mo, in Ouest, Nippes, Sud-Est, and Artibonite, Haiti, 2013 n=79

Variable	OR	Standard Error	P-Value	95% CI
Annual Household Income, Haitian Gourde (HTG) [b,c]				
13 500-27 000	2.31	1.53	0.20	0.63-8.43
>27 000-40 500	2.74	2.68	0.30	0.40-18.59
>40 500	0.54	0.52	0.53	.08-3.60
Don't Know	7.59	9.18	0.09	0.71-81.15
Location of Recent Birth (Facility) [d]	0.40	0.23	0.12	0.12-1.27
Counseled on Continued Breastfeeding [e]	5.60	5.06	0.06	0.95-32.96
Infant Age	0.67	0.12	0.04	1.10-16.60

[a.] Exclusive breastfeeding was defined as those children 0-6 mo who were breastfed and not fed any other liquids, semi-solids, or solids the day preceding the survey
[b.] The exchange rate on June, 13th 2013 (the first day of data collection) was 43.20 units per US dollar
[c.] Reference group is those with reported annual household incomes < 13 500 HTG
[d.] Reference group is those who gave birth outside a facility (at their home or another's home)
[e.] Reference group is those who reported never having received counseling concerning breastfeeding for ≥2 y

Table 4. Multivariable Logistic Regression Showing Determinants of Continued Breastfeeding [a] Among Children 20-24 mo, in Ouest, Nippes, Sud-Est, and Artibonite, Haiti, 2013 n=42

Variable	OR	Standard Error	P-Value	95% CI
Rural [b]	0.09	0.14	0.14	0.00-2.23
Counseled on Continued Breastfeeding [c]	2.89	4.37	0.48	0.15-55.89
Parity	1.58	0.43	0.10	0.92-2.71
Infant's Age	0.51	0.29	0.24	0.16-1.57

[a.] Continued breastfeeding was defined as those children 20-24 mo who were breastfed the day preceding the survey

[b.] Reference group is those living in urban households

[c.] Reference group is those who reported never having received counseling concerning breastfeeding for ≥2 y

Table 5. Multivariable Logistic Regression Showing Determinants of Minimum Dietary Diversity [a] Among Children 6-24 mo, in Ouest, Nippes, Sud-Est, and Artibonite, Haiti, 2013 n=231

Variable	OR	Standard Error	P-Value	95% CI
Parity	0.86	0.13	0.34	0.64-1.17
Received Postnatal Care [b]	3.06	2.12	0.11	0.79-11.92
Rural [c]	0.74	0.28	0.42	0.35-1.55
Location of Recent Birth (Facility) [d]	1.17	0.50	0.71	0.51-2.69
Received IYCF [e] Counseling After Birth	1.20	0.56	0.69	0.48-2.99
School Attended [f]				
Primary	2.53	2.08	0.26	0.50-12.69
Secondary	4.40	3.53	0.065	0.91-21.23
Higher	2.97	3.16	0.31	0.37-23.88

[a.] Dietary diversity score is calculated using seven food groups: grains, roots and tubers; legumes and nuts; dairy products; flesh foods; eggs; vitamin-A rich fruits and vegetables; and other fruits and vegetables. Consumption, within the last 24 hours, of any one of these food groups is sufficient regardless of quantity. In order to achieve minimum dietary diversity, children must have consumed a minimum of four food groups. The cut-off of four was chosen because it has been shown to be associated with better quality diets (20)

[b.] Reference group is those who did not receive any postnatal care following their most recent birth

[c.] Reference group is those living in urban households

[d.] Reference group is those who gave birth outside a facility (at their home or another's home)

[e.] Infant and Young Child Feeding

[f.] Reference group is those who never attended school

Chapter 4: PUBLIC HEALTH IMPLICATIONS

The results of this study identify key attitudes and beliefs that shape IYCF practices in these four departments in Haiti and highlight the importance of addressing those that may pose barriers to optimal practices while building on those that encourage exclusive and continued breastfeeding and the feeding of diverse complementary foods. This study also attempts to identify independent factors associated with these three practices and draw attention to possible high-risk or target populations for future interventions.

In assessing the prevalence of three key IYCF behaviors (exclusive breastfeeding, continued breastfeeding and feeding of diverse complementary foods) significant gaps in optimal practices were found. While levels of exclusive breastfeeding were sub-optimal (57%), most concerning was the low prevalence of continued breastfeeding (11.9%) and diverse complementary feeding (21.1%). Multivariate regression analysis identified infant's age as associated with exclusive breastfeeding.

Qualitative data were used to identify beliefs and attitudes that may both act as barriers and enablers to optimal IYCF practices. The most salient finding was that despite positive beliefs about the value of breast milk, the common understanding that a mother's health and mental state is directly linked to the quality of her breast milk may often act as a barrier to exclusive and continued breastfeeding. Poor diet, pregnancy, ill health, and psychological distress were all mentioned as possible reasons to discontinue breastfeeding or to introduce complementary foods prior to six months. Rarely is it believed that the breast milk is so compromised that it should be withheld entirely, rather women believe that it may become weak or dirty and that it will be unsatisfactory to the child. Dörnemann and Kelly found similar beliefs related to the relationship between a

mother's health and the quality of her breast milk among an exclusively post-2010 earthquake population in Léogâne (35).

Diverse complementary feeding is limited in this population for several reasons. Mothers often reported difficulty introducing complementary foods because their children were reluctant to eat and preferred breastfeeding to solid or semi-solid foods. There is also a perception that continued breastfeeding is only appropriate if complementary foods are not physically or financially available and that women with the economic means will wean their children earlier than those without. The variety of complementary foods that are traditionally acceptable may also inhibit diverse complementary feeding. Mothers often first introduce porridges made by mixing milk, sugar and occasionally cinnamon with various flours and starches including crackers, flour made from dried banana or cassava, and a pre-packaged enriched product (Nourisoy).

Future Directions

One limitation of this study is that, due to logistic and timing constraints, it failed to collect much qualitative data from urban residents. Previous studies in Haiti concerning IYCF in urban areas have focused on the post-2010 earthquake population specifically and not the urban population in general (34, 35). It is possible that there exist beliefs and attitudes surrounding IYCF that are particular to urban mothers and that were not fully captured by this study. Future studies among urban women in Port-au-Prince specifically may be useful in identifying these differences.

Because of the nature of the IYCF indicators, sample sizes for each particular IYCF practice were small (61, 75). As a result, it is possible that we were unable to detect important associations between socio-demographic characteristics and the three outcomes

of interest. These associations may be important when identifying target populations for future IYCF programs and interventions.

Recently, official development assistance devoted to the nutrition sector in Haiti has seen a dramatic increase. From 2011 to 2012, Haiti saw a more than three-fold increase in United States Agency for International Development (USAID) funding for childhood nutrition programs, from $0.7 million to $2.3 million USD (76). In order to maximize the impact of this increased funding, special attention should be paid to improving IYCF practices which has been shown to be one of the most cost effective means of improving child nutrition (5). For example, last year USAID launched the Kore Lavi Program in Haiti (77). As part of the Feed the Future initiative, the Kore Lavi program will provide the Government of Haiti with funding to establish a voucher-based system to improve access to foods among families with children less than two years of age. In addition to providing vouchers, the Kore Lavi program may also consider ways to promote IYCF education and optimal practices by not only providing mothers with means of purchasing diverse complementary foods but with the knowledge of what foods may be most beneficial to introduce.

The delivery of IYCF messaging and counseling could be improved. Studies have shown that effective lactation and peer counseling at both clinic and community levels have been effective in increasing exclusive breastfeeding practices in Ghana and Sub-Saharan Africa (78, 79). These studies highlight the potential impact of strong and routine IYCF counseling during both the prenatal and postnatal periods. Women most often reported receiving IYCF counseling from doctors, nurses and close family and community members but rarely from midwives or traditional practitioners. A large percentage

(37.4%) of survey respondents most recently gave birth at home indicating that midwives and traditional practitioners are important care providers in these communities. Efforts to engage these practitioners as well may expand the reach of IYCF promotion efforts to those women who do not seek care regularly at health facilities.

Efforts to improve the content of IYCF counseling received in health facilities and from community health workers are also important in order to maximize the effects. Current and future behavior change communication materials and strategies should be adapted to address concerns and misunderstandings identified by this and other studies. Most women were comfortable with exclusive breastfeeding recommendations but few reported having received counseling about continued breastfeeding. Training that promotes the full spectrum of recommended IYCF practices, not just exclusive breastfeeding, may be needed for health care providers. Allowing more time for communication and counseling at routine health visits or at community level activities may promote behavior change and adaption of optimal practices (79, 80). IYCF support strategies, including lipid-based nutrition supplementation, education, and social support services have been shown to reduce stunting and wasting among HIV-exposed children 6-12 months of age in Haiti (81). These strategies may be suitable for adaptation for use in the general population to encourage optimal IYCF. These types of counseling efforts have been shown to be particularly effective in improving complementary feeding practices when combined with participant engagement activities such as participatory recipe trials (82, 83) .

Conclusion

Continued prioritization of the promotion of IYCF practices in Haiti will improve child nutrition and reduce under-five mortality. As this study has demonstrated, there are significant beliefs that act both as barriers and enablers to exclusive and continued breastfeeding and diverse complementary feeding. These beliefs should be addressed and encouraged as appropriate. This study also highlighted the importance of continued promotion of exclusive breastfeeding as children approach six months of age. Efforts to tailor interventions to operate within the existing trends, norms, and beliefs prevalent in individual communities will be crucial to their success.

REFERENCES

1. Horton R, Lo S. Nutrition: a quintessential sustainable development goal. Lancet. 2013;382(9890):371-2.
2. World Health Organization. Proposed global targets for maternal, infant and young child nutrition. World Health Organization 2012.
3. Bezanson K, Iseman P. Scaling up nutrition: a framework for action The Bill and Melinda Gates Foundation,The Goverment of Japan, The World Bank, UNICEF, 2010.
4. Black RE, Victora CG, Walker SP, Bhutta ZA, Christian P, de Onis M, et al. Maternal and child undernutrition and overweight in low-income and middle-income countries. Lancet. 2013;382(9890):427-51.
5. Bhutta ZA, Das JK, Rizvi A, Gaffey MF, Walker N, Horton S, et al. Evidence-based interventions for improvement of maternal and child nutrition: what can be done and at what cost? Lancet. 2013;382(9890):452-77.
6. Arabi M, Frongillo EA, Avula R, Mangasaryan N. Infant and Young Child Feeding in Developing Countries. Child Development. 2012;83(1):32-45.
7. World Health Organization, UNICEF. Global strategy for infant and young child feeding. Geneva, Switzerland. World Health Organization 2003.
8. Xiaodong Cai, Tessa Wardlaw, David W Brown. Global trends in exclusive breastfeeding. International Breastfeeding Journal. 2012;7(12).
9. Lutter CK, Daelmans BM, de Onis M, Kothari MT, Ruel MT, Arimond M, et al. Undernutrition, poor feeding practices, and low coverage of key nutrition interventions. Pediatrics. 2011;128(6):e1418-27.
10. Dewey KG, Huffman SL. Maternal, infant, and young child nutrition: combining efforts to maximize impacts on child growth and micronutrient status. Food and Nutrition Bulletin. 2009;30(2 Suppl):S187-9.
11. Dewey KG, Mayers DR. Early child growth: how do nutrition and infection interact? Maternal and Child Nutrition. 2011;7 Suppl 3:129-42.
12. Brown KH, Black RE, Lopez de Romana G, Creed de Kanashiro H. Infant-feeding practices and their relationship with diarrheal and other diseases in Huascar (Lima), Peru. Pediatrics. 1989;83(1):31-40.
13. Howie PW, Forsyth JS, Ogston SA, Clark A, Florey CD. Protective effect of breast feeding against infection. BMJ (Clinical research ed). 1990;300(6716):11-6.
14. Welsh JK, May JT. Anti-infective properties of breast milk. Journal of Pediatrics. 1979;94(1):1-9.
15. Fawzi WW, Herrera MG, Nestel P, El Amin A, Mohamed KA. A longitudinal study of prolonged breastfeeding in relation to child undernutrition. International Journal of Epidemiology. 1998;27(2):255-60.
16. Simondon KB, Simondon F, Costes R, Delaunay V, Diallo A. Breast-feeding is associated with improved growth in length, but not weight, in rural Senegalese toddlers. American Journal of Clinical Nutrition. 2001;73(5):959-67.
17. Daniels MC, Adair LS. Breast-feeding influences cognitive development in Filipino children. Journal of Nutrition. 2005;135(11):2589-95.
18. Dewey KG, Cohen RJ, Brown KH, Rivera LL. Effects of exclusive breastfeeding for four versus six months on maternal nutritional status and infant motor development: results of two randomized trials in Honduras. Journal of Nutrition. 2001;131(2):262-7.

19. Kramer MS, Aboud F, Mironova E, Vanilovich I, Platt RW, Matush L, et al. Breastfeeding and child cognitive development: new evidence from a large randomized trial. Archives of General Psychiatry. 2008;65(5):578-84.
20. Shrimpton R, Victora CG, de Onis M, Lima RC, Blossner M, Clugston G. Worldwide timing of growth faltering: implications for nutritional interventions. Pediatrics. 2001;107(5):E75.
21. Kosek M, Bern C, Guerrant RL. The global burden of diarrhoeal disease, as estimated from studies published between 1992 and 2000. Bulletin of the World Health Organization. 2003;81(3):197-204.
22. Chhagan MK, Van den Broeck J, Luabeya KK, Mpontshane N, Tomkins A, Bennish ML. Effect on longitudinal growth and anemia of zinc or multiple micronutrients added to vitamin A: a randomized controlled trial in children aged 6-24 months. BMC Public Health. 2010;10:145.
23. Lutter C, Habicht JP, Rivera J, Martorell R. The relationship between energy intake and diarrhoeal disease in the effects on child growth: biological model, evidence, and implications for public health policy.Food and Nutrition Bulletin. 1992;14:35-42.
24. Lutter CK, Mora JO, Habicht JP, Rasmussen KM, Robson DS, Sellers SG, et al. Nutritional supplementation: effects on child stunting because of diarrhea. American Journal of Clinical Nutrition. 1989;50(1):1-8.
25. Vossenaar M, Solomons NW. The concept of "critical nutrient density" in complementary feeding: the demands on the "family foods" for the nutrient adequacy of young Guatemalan children with continued breastfeeding. American Journal of Clinical Nutrition. 2012;95(4):859-66.
26. Disha A, Rawat R, Subandoro A, Menon P. Infant and young child feeding (IYCF) practices in Ethiopia and Zambia and their association with child nutrition: Analysis of demographic and health suvey data. African Journal of Food, Agriculture, Nutrition and Development. 2012;12(2).
27. Jones G, Steketee RW, Black RE, Bhutta ZA, Morris SS. How many child deaths can we prevent this year? Lancet. 2003;362(9377):65-71.
28. United Nations Children's Fund (UNICEF). The state of the world's children 2012. New York, NY 2012.
29. Cayemittes M, Basangu M, Bizimana J, Barrere B, Sévère B, Cayemittes V, et al. Enquete mortalité, morbidité et utlisation des services, Haiti, 2012. Calverton, Maryland, USA: MSPP, IHE, ICF International 2013.
30. Ayoya MA, Heidkamp R, Ngnie-Teta I, Mamadoultaibou A, Daniel EF, Durandisse EB, et al. Precis of nutrition of children and women in Haiti: analyses of data from 1995 to 2012. Annals of the New York Academy of Sciences. 2014;1309(1):37-62.
31. Heidkamp R, Ayoya MA, Teta IN, Stoltzfus RJ, Marhone JP. Breastfeeding practices and child growth outcomes in Haiti: an analysis of data from Demographic and Health Surveys. Maternal and Child Nutrition [Internet]. 2013 Aug 18.
32. Heidkamp RA, Ayoya MA, Teta IN, Stoltzfus RJ, Marhone JP. Complementary feeding practices and child growth outcomes in Haiti: an analysis of data from Demographic and Health Surveys. Maternal and Child Nutrition [Internet]. 2013 Oct 7.
33. Ministère de la Santé Publique et de la Population. Rapport de l'enquete nutritionnelle nationale de la methodologie SMART UNICEF, Programme Alientaire Mondial 2012.
34. Ayoya MA, Golden K, Ngnie-Teta I, Moreaux MD, Mamadoultaibou A, Koo L, et al. Protecting and improving breastfeeding practices during a major emergency: lessons learnt from the baby tents in Haiti. Bulletin of the World Health Organization. 2013;91(8):612-7.
35. Dörnemann J, Kelly AH. 'It is me who eats, to nourish him': a mixed-method study of breastfeeding in post-earthquake Haiti. Maternal and Child Nutrition. 2013;9(1):74-89.

36. Nabarro D. Global child and maternal nutrition--the SUN rises. Lancet. 2013;382(9893):666-7.
37. Maternal and child nutrition: building momentum for impact. Lancet. 2013;382(9890):372-5.
38. PAHO, WHO. Guiding principles for complementary feeding of the breastfed child. Washington, DC. Pan American Health Organization 2003.
39. Liu L, Johnson HL, Cousens S, Perin J, Scott S, Lawn JE, et al. Global, regional, and national causes of child mortality: an updated systematic analysis for 2010 with time trends since 2000. Lancet. 2012;379(9832):2151-61.
40. WHO Collaborative Study Team on the Role of Breastfeeding on the Prevention of Infant Mortality Effect of breastfeeding on infant and child mortality due to infectious diseases in less developed countries: a pooled analysis. WHO Collaborative Study Team on the Role of Breastfeeding on the Prevention of Infant Mortality. Lancet. 2000;355(9202):451-5.
41. Arifeen S, Black RE, Antelman G, Baqui A, Caulfield L, Becker S. Exclusive breastfeeding reduces acute respiratory infection and diarrhea deaths among infants in Dhaka slums. Pediatrics. 2001;108(4):E67.
42. Kassim OO, Ako-Anai KA, Torimiro SE, Hollowell GP, Okoye VC, Martin SK. Inhibitory factors in breastmilk, maternal and infant sera against in vitro growth of Plasmodium falciparum malaria parasite. Journal of Tropical Pediatrics. 2000;46(2):92-6.
43. Lauer JA, Betran AP, Barros AJD, de Onis M. Deaths and years of life lost due to suboptimal breast-feeding among children in the developing world: a global ecological risk assessment. Public Health Nutrition. 2006;9(6):673-85.
44. Hanson LA, Korotkova M, Lundin S, Haversen L, Silfverdal SA, Mattsby-Baltzer I, et al. The transfer of immunity from mother to child. Annals of the New York Academy of Sciences. 2003;987:199-206.
45. Walker A. Breast milk as the gold standard for protective nutrients. Journal of Pediatrics. 2010;156(2 Suppl):S3-7.
46. Lepage P, Van de Perre P. The immune system of breast milk: antimicrobial and anti-inflammatory properties. Advances in Experimental Medicine and Biology. 2012;743:121-37.
47. Hosea Blewett HJ, Cicalo MC, Holland CD, Field CJ. The immunological components of human milk. Advances in Food and Nutrition Research. 2008;54:45-80.
48. Dewey KG, Brown KH. Update on technical issues concerning complementary feeding of young children in developing countries and implications for intervention programs. Food and Nutrition Bulletin. 2003;24(1):5-28.
49. Grummer-Strawn LM. Does prolonged breast-feeding impair child growth? A critical review. Pediatrics. 1993;91(4):766-71.
50. Victora CG, Vaughan JP, Martines JC, Barcelos LB. Is prolonged breast-feeding associated with malnutrition? American Journal of Clinical Nutrition. 1984;39(2):307-14.
51. Molbak K, Gottschau A, Aaby P, Hojlyng N, Ingholt L, da Silva AP. Prolonged breast feeding, diarrhoeal disease, and survival of children in Guinea-Bissau. BMJ (Clinical research ed). 1994;308(6941):1403-6.
52. Dewey KG, Adu-Afarwuah S. Systematic review of the efficacy and effectiveness of complementary feeding interventions in developing countries. Maternal & Child Nutrition. 2008;4 Suppl 1:24-85.
53. Food and Agriculture Organization, World Health Organization. Vitamin and mineral requirements in human nutrition Geneva: World Health Organization, WHO Department of Nutrition for Health and Development; 2005.

54. Dewey KG, Brown KH. Update on technical issues concerning complementary feeding of young children in developing countries and implications for intervention programs. Food and Nutrition Bulletin. 2003;24(1):5-28.
55. Dewey K. Complementary feeding. In: B Caballero, L Allen, A Prentice, editors. Encyclopedia of Human Nutrition. Amsterdam: Elsevier Ltd.; 2005. p. 465-70.
56. Mortensen EL, Michaelsen KF, Sanders SA, Reinisch JM. The association between duration of breastfeeding and adult intelligence. JAMA : The Journal of the American Medical Association. 2002;287(18):2365-71.
57. Allen LH. Global dietary patterns and diets in childhood: implications for health outcomes. Annals of Nutrition and Metabolism. 2012;61 Suppl 1:29-37.
58. Allen LH. The nutrition CRSP: what is marginal malnutrition, and does it affect human function? Nutrition Reviews. 1993;51(9):255-67.
59. Martorell R, Khan LK, Schroeder DG. Reversibility of stunting: epidemiological findings in children from developing countries. European Journal of Clinical Nutrition. 1994;48 Suppl 1:S45-57.
60. World Bank. Repositioning nutrition as central to development-A strategy for large-scale action. 2006.
61. WHO, USAID, UNICEF, AED, University of California Davis, International Food Policy Research Institute. Indicators for assessing infant and young child feeding practices: Conclusions of a consensus meeting held 6-8 November 2007 in Washington D.C., USA. 2007 2008. Report No.: 978 92 4 159666 4.
62. United Nations Development Programme. Human Development Report. New York, NY: United Nations Development Programme, 1990.
63. Washington University in St. Louis. Complementary food security in an urban slum in Haiti. Washington University in St. Louis George Warren Brown School of Social Work 2013.
64. USAID. Country brief: Haiti preventing malnutrition of mothers and children within the context of HIV and emergencies. Washington, D.C.: USAID, 2011.
65. Ministère de la Santé Publique et de la Population Unité de Coordination du Programme National d'Alimentation et de Nutrition. Politique Nationale de Nutrition. Port-au-Prince, Haiti: Ministère de la Santé Publique et de la Population 2012.
66. Cayemittes M, Institute Haitien de l'Enfance, Macro International, Institute for Resource Development. Enquete mortalité, morbidité et utilisation des services (EMMUS-II): Haiti, 1994-95. Petionville, Haiti and Calveton, MD: 1995.
67. Cayemittes M. Enquete mortalité, mobidité et utilisation des services (EMMUS-III), Haiti 2000. Pétionville, Haiti, Institut haitien de l'enfance, Calverton, Maryland CORC Macro: 2001.
68. Cayemittes M, Placide MF, Mariko S, Barrere B, Severe B, Alexandre C. Enquete mortalité, morbidité et utilisation des services (EMMUS-IV): Haiti, 2005-2006. Calverton, MD, USA Ministere de la Sante Publique et de la Population, Institut Haitien de l'Enfance, Macro International 2007.
69. Alvarez M, Murray G. Socialization for scarcity: Child feeding beliefs and practices in a Haitian village. United States Agency for International Development 1981 August 28, 1981. Report No.: 036110.
70. Roman SB. Exclusive breastfeeding practices in rural haitian women. University of Connecticut Health Center Graduate School University of Connecticut 2007.
71. Badham J. Ensuring optimal breastfeeding and improvements in complementary feeding to improve infant and young child nutrition in developing countries. Maternal and Child Nutrition. 2013;9 Suppl 1:1-5.
72. World Bank. World Development Indicators.

73. Perry HB, Ross AG, Fernand F. Assessing the causes of under-five mortality in the Albert Schweitzer Hospital service area of rural Haiti. Pan American Journal of Public Health. 2005;18(3):178-86.
74. World Health Organization. WHO global database on child growth and malnutrition Geneva, Switzerland: The World Health Organization 1997.
75. Pan American Health Organization, UNICEF. ProPAN: Process for the promotion of child feeding Washington, D.C. : Pan American Health Organization, 2013.
76. USAID. Health in Haiti Results of USAID's Health Spending Available from: http://results.usaid.gov/haiti/health#fy2012.
77. USAID Launches New Program to Help Prevent Hunger and Malnutritio in Haiti [press release]. Washington, DC: USAID 2013.
78. Aidam BA, Perez-Escamilla R, Lartey A. Lactation counseling increases exclusive breast-feeding rates in Ghana. Journal of Nutrition. 2005;135(7):1691-5.
79. Tylleskar T, Jackson D, Meda N, Engebretsen IM, Chopra M, Diallo AH, et al. Exclusive breastfeeding promotion by peer counsellors in sub-Saharan Africa (PROMISE-EBF): a cluster-randomised trial. Lancet. 2011;378(9789):420-7.
80. USAID, PEPFAR. Focusing on improving complementary feeding in Ethiopia trials of improved practices in an urban area. Washington, DC 2011.
81. Heidkamp RA, Stoltzfus RJ, Fitzgerald DW, Pape JW. Growth in late infancy among HIV-exposed children in urban Haiti is associated with participation in a clinic-based infant feeding support intervention. Journal of Nutrition. 2012;142(4):774-80.
82. National Food and Nutrition Commission Government of the Republic of Zambia, The Food and Agriculture Organization of the United Nations. Improved complementary foods recipe booklet family foods for breastfed children in Zambia. 2007. Report No. 9982-54-005-X.
83. Puri RK, Sachdeva R. Development of low cost supplementary foods for infants and children from locally available foods in Punjab (India). Child Care Health and Development. 1984;10(4):227-36.

APPENDIX

A. Survey Tool

Etude de l'UNICEF sur les connaissances, les comportements et les habitudes lies à l'alimentation du nourrisson et du jeune enfant (ANJE) 2013

Introduction et consentement

"Bonjour. Je m'appelle_____. Je travaille pour l'Unicef. Nous menons une enquête sur les soins et l'alimentation du nourrisson et du jeune enfant. Permettez-moi de vous poser quelques questions au sujet de votre plus jeune enfant. Toutes vos réponses seront confidentielles et ne seront partagées qu'entre les membres de l'équipe qui conduit l'étude. Et votre nom ne sera pas enregistré. Vous n'êtes pas obligés d'y prendre part, cependant nous espérons que vous répondrez à nos questions car votre opinion nous importe beaucoup. Vous pouvez choisir de ne pas répondre à une question en particulier ou à tout moment, mettre un terme à l'interrogatoire **"**

"Avez-vous des questions?"

"Puis-je débuter l'interrogatoire?"

ACCORD DE PARTICIPATION:

☐ Oui.....1
☐ Non 0
(SI NON, Fin de l'interrogatoire)

REGION: ☐ Sud-Est.....1
☐ Ouest 2
☐ Nippes.....3
☐ Artibonite.....4

CAMPAGNE/VILLE: ☐ Campagne.....1
☐ Ville.....2

DATE: __ __ /__ __ /__ __ __ __ (JJ/MM/AAAA)

HEURE: __ __ :__ __ (FORMAT 24 HEURE)

A LIRE SEULEMENT LES RESPONSES SI IL EST INDIQUÉ. CHOISIR UNE SEULE REPONSE, A MOINS D'INSTRUCTION CONTRAIRE. COCHER LA CASE DE LA BONNE RESPONSE.

A	Demographies **"Pour commence, je vais poser quelques questions à propos de votre formation et de vos antecedents d grossesse"**	
A1	Avez-vous donné naissance à un enfant durant les deux années précédentes (depuis 2011)?	☐ Oui .....1 ☐ Non.....0 **(SI NON, FIN)**
A2	L'enfant, est-il encore en vie?	☐ Oui.....1 ☐ Non.....0 **(SI NON, FIN)**
A3	Quel age avez-vous?	☐ 18-22 ans .....1 ☐ 23-27 ans.....2 ☐ 27-31 ans .....3 ☐ 32-36 ans.....4 ☐ 37-42 ans.....5 ☐ 43-47 ans .....6 ☐ 48-52 ans.....7 ☐ Ne sait pas.....8
A4	Combien d'enfants avez-vous?	_____ _____
A5	Avez-vous été à l'école?	☐ Oui .....1 ☐ Non.....0 **(SI NON PASSER AU #A8)**
A6	Quel cycle d'études avez-vous atteint?	☐ Primaire .....1 ☐ Secondaire.....2 ☐ Niveau supérieur 3
A7	Quel cycle d'études avez-vous bouclé?	☐ Primaire.....1 ☐ Secondaire.....2 ☐ Niveau supérieur .....3 ☐ Aucune.....4
A8	Est-ce que vous travaillez à l'extérieur de la maison ?	☐ Oui .....1 ☐ Non.....0 **(SI NON PASSER AU #A10)**
A9	Normalement, combien des heurs passez-vous dehors de la maison chaque jour?	☐ Moins de 1 heure .....1 ☐ 1-3 heures .....2 ☐ 3-6 heures.....3 ☐ 6-9 heures.....4 ☐ 9-12 heures.....5 ☐ Plus de 12 heures 6

A10	Diriez-vous que votre ménage gagne plus de13,500 HTG par an?	☐Oui .....1 ☐ Non .....0 ☐ Ne sait pas.....99 **(SI NON OU NE SAIT PAS, PASSER A #A13)**
A11	Diriez-vous que votre ménage gagne plus de 27,000 HTG par an?	☐Oui .....1 ☐ Non .....0 ☐ Ne sait pas.....99 **(SI NON OU NE SAIT PAS, PASSER A #A13)**
A12	Diriez-vous que votre ménage gagne plus de 40,500 HTG par an?	☐Oui .....1 ☐ Non .....0 ☐ Ne sait pas.....99
A13	Quel âge a votre plus jeune enfant?	_____ _____ (mois) si moins d'une mois ecrit 1
A14	Comment s'appelle votre plus jeune enfant? **"Cette information ne sera pas enregistrée et sera utilisée uniquement dans le cadre de cet interrogatoire pour nous référer à l'enfant."**	_____
B	**Croyances** **"Maintenant, j'aimerais vous poser quelques questions concernant la manière la mieux appropriée de nourrir et de prendre soins de (NOM)"**	
B1	Certaines disent qu'il existe des situations dans lesquelles une mère ne devrait pas allaiter son enfant. Etes-vous de cet avis?	☐ Oui.....1 ☐ Non .....0 ☐ Ne sait pas.....99
B2	Quelle est <u>la chose la plus importante</u> qu'une mère peut faire en vue d'améliorer la qualité de son lait? **(COCHER UNE SEULE REPONSE)**	☐ Manger plus.....1 ☐ Manger une nourriture de meilleure qualité.....2 ☐ Boire plus.....3 ☐ Boire une infusion spéciale.....4 ☐ Prendre un médicament spécifique.....5 ☐ Manger des aliments spécifiques.....6 ☐ Il n'y a rien qu'elle puise faire.....7 ☐ Autre _____.....8

B3	Quelle est la chose <u>la plus importante</u> qu'une mère peut faire pour avoir assez de lait? **(COCHER UNE SEULE REPONSE)**	☐ Prenez suffisamment de liquide / semi-liquide.....1 ☐ Buvez bouillie.....2 ☐ Mangent beaucoup.....3 ☐ Mettre le bébé au sein immédiatement après la naissance .....4 ☐ Soins des seins / mamelons.....5 ☐ Téter fréquemment pour stimuler la production de lait.....6 ☐ Allaitement maternel exclusif pendant les 4 premiers mois de vie.....7 ☐ Eviter la bouteille.....8 ☐ Il n'y a rien qu'elle puise faire.....9 ☐Ne sait pas.....10 ☐ Manger des legumes.....11 ☐ Autre _____.....12
B4	Qu'est-ce que une mère peut faire pour éviter que les seins soient trop pleins et douloureux ?	☐ Extraire dans un bol.....1 ☐ Pour vider complètement un sein avant de donner l'autre.....2 ☐ Allaiter le plus souvent.....3 ☐ Ne sait pas.....4 ☐ Autre _____.....5
B5	Si un enfant est nourri uniquement au lait maternel, à quel âge devrait-on cesser l'allaitement maternel exclusif ou introduire d'autres aliments ou boissons dans son alimentation?	**____ ____ (MOIS)** ☐ Ne sait pas.....99
B6	A quel âge devrait-on définitivement cesser d'allaiter un enfant?	**____ ____ (MOIS)** ☐ Ne sait pas.....99
B7	Existe-t-il le moindre avantage pour un enfant d'etre allaité?	☐ Oui.....1 ☐ Non .....0 ☐ Ne sait pas.....99 **(SI NON OU NE SAIT PAS, PASSER #B9)**
B8	Quel <u>le principal</u> avantage pour (NOM) d'être allaité? **(CHOISIR UNE SEULE REPONSE)**	☐ Aide l'enfant à devenir fort.....1 ☐ Aide l'enfant à mieux travailler à l'école.....2 ☐ Aide l'enfant à apprendre à marcher.....3 ☐Aide à la croissance de l'enfant.....4 ☐ Aide à renforcer le lien affectif entre l'enfant et sa mère.....5 ☐ Empeche à l'enfant de tomber malade.....6 ☐ Ne sait pas.....99

B9	Certaines femmes affirment qu'il faut cesser l'allaitement maternel si elles deviennent enceintes. Etes-vous de cet avis?	☐ En accord.....1 ☐ En désaccord.....2 ☐ Ne sait pas.....99
B10	Certaines femmes affirment que si elles n'ont pas une bonne alimentation, leur lait ne sera pas de bonne qualité. Etes-vous de cet avis?	☐ En accord.....1 ☐ En désaccord.....2 ☐ Ne sait pas.....99
B11	Certaines femmes affirment qu'elles ne devraient pas allaiter leurs enfants si elles n'ont pas une bonne alimentation. Etes-vous de cet avis?	☐ En accord.....1 ☐ En désaccord.....2 ☐ Ne sait pas.....99
B12	Certaines femmes affirment qu'elles ne devraient pas allaiter leurs enfants si elles ont été trop longtemps exposées au soleil. Etes-vous de cet avis?	☐ En accord.....1 ☐ En désaccord.....2 ☐ Ne sait pas.....99
B13	Certaines femmes affirment qu'elles ne devraient pas allaiter leurs enfants si elles sont stressées. Etes-vous de cet avis ?	☐ En accord.....1 ☐ En désaccord.....2 ☐ Ne sait pas.....99
B14	Certaines femmes affirment qu'elles ne devraient pas allaiter leurs enfants si elles sont de mauvaise humeur. Etes-vous de cet avis?	☐ En accord.....1 ☐ En désaccord.....2 ☐ Ne sait pas.....99
B15	Certaines femmes pensent qu'elles ne devraient pas allaiter leurs enfants si elles ont mangé trop tard dans la journée. Etes-vous de cet avis?	☐ En accord.....1 ☐ En désaccord.....2 ☐ Ne sait pas.....99

B16	Certaines femmes affirment que l'allaitement maternel est mieux pour un enfant que l'allaitement artificiel. Etes-vous de cet avis?	☐ En accord.....1 ☐ En désaccord.....2 ☐ Ne sait pas.....99
B17	Certaines femmes affirment que continuer l'allaitement maternel au-delà de 18 mois peut rendre l'enfant malade. Etes-vous de cet avis?	☐ En accord.....1 ☐ En désaccord.....2 ☐ Ne sait pas.....99
B18	Certaines femmes affirment qu'un enfant n'a besoin d'autres aliments ou boissons que le lait maternel pendant les premières 6 mois. Etes-vous de cet avis?	☐ En accord.....1 ☐ En désaccord.....2 ☐ Ne sait pas.....99
B19	Certaines femmes affirment qu'il est mieux pour un enfant d'être allaité jusqu'à sa deuxième année de vie. Etes-vous de cet avis?	☐ En accord.....1 ☐ En désaccord.....2 ☐ Ne sait pas.....99
B20	Certaines femmes pensent que le premier lait produit par les seins de la mère (immédiatement après la naissance) doit être donné à l'enfant. Etes-vous de cet avis ?	☐ En accord.....1 ☐ En désaccord.....2 ☐ Ne sait pas.....99
B21	Certaines femmes pensent que l'état de sante d la mère après l'accouchement, ne lui permit pas de garder le bébé en quelques heures après la naissance. Etes-vous de cet avis ?	☐ En accord.....1 ☐ En désaccord.....2 ☐ Ne sait pas.....99
C	**Comportement** **"Maintenant je vais vous questionner sur votre manière de nourir et de prendre soin de (NOM)"**	
C1	Avez-vous jamais allaité (NOM)?	☐ Oui.....1 ☐ Non.....0 **(SI NON PASSER A # C6)**

C2	(NOM) a-t-il été allaité hier?	☐ Oui.....1 ☐ Non.....0 **(SI NON PASSER A # C4)**
C3	Hier, est-ce que (NOM) a été allaité quand il/elle le voulait ou suivant un horaire pré-établi?	☐ Quand il/elle le voulait.....1 ☐ Suivant un horaire fixe 0
C4	Combien de temps après sa naissance, (NOM) a-t-il été allaité pour la première fois?	☐ Mois d'une heure après.....1 ☐ Moins de 24 heures après.....2 ☐ Plus de 24 heures après.....3 ☐ Ne sait pas.....99 .
C5	(NOM) a-t-il reçu le colostrum (premier lait)?	☐ Oui.....1 ☐ Non .....0 ☐ Ne sait pas.....99
C6	(NOM), a-t-il reçu une boisson autre que le lait maternel durant les trois premiers jours suivant l'accouchement?	☐ Oui.....1 ☐ Non .....0 ☐ Ne sait pas.....99 **(SI NON OU NE SAIT PAS, PASSER A #C8)**
C7	Qu'avez-vous donné à boire à (NOM) dans les trois premiers jours suivant l'accouchement? **(LIRE A HAUTE VOIX LES CHOIX ET COCHER TOUT CE QUI CONVIENT)**	☐ Purgatif.....1 ☐ Eau.....2 ☐ Thé.....3 ☐ Café.....4 ☐ Jus.....5 ☐ Lait artificiel pour bébé.....6 ☐ Lait .....7 (lait en boite, en poudre, ou d'animaux) ☐ Soupe.....8 ☐ Autre _____.....9 ☐ Ne sait pas.....99
C8	(NOM) a-t-il reçu d'autres boissons que le lait maternel hier?	☐ Oui.....1 ☐ Non .....0 **(SI NON, PASSER A #C11)**
C9	Quel âge avait (NOM) lorsque vous avez commencé à lui donner des boissons autres que le lait maternel?	____ ____ (mois) si moins d'une mois écrit 1

C10	Quelles boissons (NOM) a-t-il/elle reçues dans les 24 dernières heures? **(LIRE A HAUTE VOIX LES CHOIX ET COCHER TOUT CE QUI CONVIENT)**	☐ Eau.....1 ☐ Thé.....2 ☐ Café.....3 ☐ Jus.....4 ☐ Lait artificiel pour bébé.....5 ☐ Lait .....6 (lait en boite, en poudre, ou d'animaux) ☐ Soupe.....7 ☐Aucune.....8 ☐ Autre _____.....9 ☐ Ne sait pas.....99
C11	Hier, avez-vous donné des aliments solides ou semi-solides à (NOM)?	☐ Oui.....1 ☐ Non .....0 **(SI NON, PASSER A #C15)**
C12	Quel âge avait (NOM) lorsque vous avez commencé à lui donner des aliments?	____ ____ (MOIS) ____ ____ (JOURS)
C13	Qui décide de ce que l'enfant devrait manger ou pas? **(COCHER UNE SEULE REPONSE)**	☐ Mère.....1 ☐ Grand-mère.....2 ☐Frère/ sœur.....3 ☐ Tante / oncle.....4 ☐ Père.....5 ☐ Autre _____.....6

C14	Quels aliments avez-vous donné à (NOM) dans les 24 dernières heures? **(LIRE LES REPONSES A HAUTE VOIX ET COCHER TOUT CE QUI CONVIENT)**	☐ Bouillie.....1 (mais, farine, cassave, banane, et autres) ☐ Céréale pour bébé.....2 ☐ Grains .....3 (pain, riz, mais, blé, pate alimentaire, biscuits, friandises, ou autre céréale à base de plante) ☐ Tubercules .....4 (pomme de terre, cassave, igname) ☐ Légumes jaunes .....5 (carottes, patate douce) ☐Légumes à feuilles vertes.....6 ☐Mangue, papaye, melons, grenadine.....7 ☐Autres fruits ou légumes.....8 (figue banana, haricots verts, avocats, tomates) ☐Abats de volailles ou d'animaux.....9 (foie, cœur, rein) ☐ Viande rouge.....10 (bœuf, porc, agneau, chèvre, lapin,cheval) ☐ Volaille.....11 (poulet, oie, canard, pintade) ☐Œufs.....12 ☐Crustacés ou poisons frais ou séchés.....13 ☐Noix.....14 ☐Produits laitiers .....15 (fromage, yogourts)

		☐Aucune.....16 ☐Ne sait pas.....17 ☐Autre_____.....18
C15	Avez-vous jamais voulu allaiter (NOM) sans que vous n'ayez pu le faire? (Vous ne vous sentiez pas capable de le faire ou l'enfant n'a pas voulu se nourrir)	☐ Oui.....1 ☐ Non .....0 ☐ Ne sait pas .....99 **(SI NON OU NE SAIT PAS, PASSER #C17)**
C16	Quelle est <u>la principale raison</u> qui vous empêche parfois d'allaiter votre enfant même quand vous auriez souhaité le faire? **(COCHER UNE SEULE REPONSE)**	☐ L'enfant ne voudra pas allaiter.....1 ☐ Je n'avais pas bien mangé.....2 ☐J'étais malade.....3 ☐ Je devais travailler.....4 ☐ Je devais prendre soins d'autres enfants.....5 ☐ Je n'avais pas assez de lait.....6 ☐ Autre _____.....7

C17	Avez-vous jamais eu recours à une nourrice pour allaiter (NOM)? **“ En d'autres termes est-ce que (NOM) a jamais été allaité par une femme qui n'était pas sa mère biologique?"**	☐ Oui.....1 ☐ Non .....0 ☐ Ne sait pas 99
C18	Avez-vous jamais donné du lait en poudre à (NOM)? **“Par lait en poudre, j'entends tout substitut de lait en poudre pouvant être mélangé à de l'eau et donné à un enfant?"**	☐ Oui.....1 ☐ Non.....0 ☐ Ne sait pas 99
C19	Avez-vous jamais reçu du lait en poudre sans avoir à le payer?	☐ Oui.....1 ☐ Non.....0 ☐ Ne sait pas 99
D	**Connaissances** **« Maintenant j'aimerais vous poser certaines questions concernant les soins et les éventuelles informations que vous ayez pu recevoir après la naissance de (NOM), et sur la personne qui vous les a prodigués. »**	
D1	Qui vous a aide lors de l’accouchement de (NOM) ?	☐ Médecin.....1 ☐ Infirmière.....2 ☐ Sage-femme.....3 ☐ Agent de santé.....4 ☐ Maternité privée.....5 ☐ Accoucheur qualifié.....6 ☐ Acoucheur non qualifié.....7 ☐ Médecin-Feuilles.....8 ☐ Parent / ami.....9 ☐Personne.....10 ☐ Other _____ 11

D2	Où avez-vous accouché de (NOM)?[i]	☐ Chez vous.....1 ☐ Dans une autre maison.....2 ☐ Hôpital publique.....3 ☐ Maternité publique.....4 ☐ Centre de santé publique.....5 (CAL/ CSL/ Dispensaire) ☐ Hopital privé.....6 ☐ Maternité privée.....7 ☐ Centre de santé privé.....8 (CAL/ CSL/ Dispensaire) ☐ Autre _____ 9
D3	Après la naissance de (NOM), avez-vous bénéficié d'une consultation par un personnel médical qualifié (médecin, infirmière, sage-femme)?	☐ Oui.....1 ☐ Non.....0 **(SI NON, PASSER A # D7)**
D4	Qui a fait cette consultation ?	☐ Médecin.....1 ☐ Infirmière.....2 ☐Sage-femme.....3 ☐ Accoucheur traditionnel.....4 ☐ Travailleur social.....5 ☐ Autre _____ 6
D5	Combien de temps après l'accouchement a eu lieu cette consultation ?	☐ Moins de 24 heures.....1 ☐ Moins d'une semaine .....2 ☐ Plus d'une semaine.....3
D6	Lors de votre consultation après la naissance vous a-t-on expliqué comment et de quoi nourrir votre enfant?	☐ Oui.....1 ☐ Non .....0 ☐ Ne sait pas.....99
D7	Pendant les trois premiers jours après la naissance de votre enfant, avez-vous bénéficié d'assistance pratique ou de conseils pour vous aider à débuter l'allaitement?	☐ Oui.....1 ☐ Non .....0 ☐ Ne sait pas.....99
D8	Vous a-t-on dit de nourrir (NOM) par l'allaitement	☐ Oui.....1 ☐ Non 0

	maternel exclusif pendant les six premiers mois? **"Par allaitement maternel exclusif, j'entends donner à (NOM) uniquement du lait maternel et aucune autre boisson y compris de l'eau."**	☐ Ne sait pas.....99 **(SI NON OU NE SAIT PAS, PASSER A #D10)**
D9	Qui vous a dit d'alimenter (NOM) uniquement au lait maternel? **(COCHER TOUT CE QUI CONVIENT)**	☐ Médecin.....1 ☐Infirmière .....2 ☐ Sage-femme.....3 ☐ Autre personnel médical.....4 ☐ Médecin-feuill .....5☐ Accoucheur traditionnel6 ☐ Mère.....7 ☐ Belle-mère .....8 ☐ Sœur ou belle-sœur.....9 ☐ Ami.....10 ☐ Personnes âgées de la communauté.....11 ☐Pere.....12 ☐ Autre _____.....13
D10	Vous a-t-on jamais informé d'allaiter (NOM) pendant deux ans?	☐ Oui.....1 ☐ Non.....0 ☐ Ne sait pas.....99 **(SI NON OU NE SAIT PAS, PASSER A #D12)**
D11	Qui vous a dit d'allaiter (NOM) pendant deux ans? **(COCHER TOUT CE QUI CONVIENT)**	☐ Médecin.....1 ☐Infirmière .....2 ☐ Sage-femme.....3 ☐ Autre personnel médical.....4 ☐ Médecin-feuille .....5 ☐ Accoucheur traditionnel.....6 ☐ Grand-mère.....7 ☐ Belle-mère .....8 ☐ Sœur ou belle-sœur.....9 ☐ Ami.....10 ☐ Personnes âgées de la communauté…11 ☐Pere.....12 ☐ Autre _____.....13

D12	Quand vous avez une question sur la façon de prendre soin de (NOM) à qui vous adressez-vous le plus souvent? **(CHOISIR UNE SEULE REPONSE)**	☐ Médecin.....1 ☐Infirmière .....2 ☐ Sage-femme.....3 ☐ Autre personnel médical.....4 ☐ Médecin-feuille .....5 ☐ Accoucheur traditionnel.....6 ☐ Grand-mère.....7 ☐ Belle-mère .....8 ☐ Sœur ou belle-sœur.....9 ☐ Ami.....10 ☐ Personnes âgées de la communauté…11 ☐Pere.....12 ☐ Autre _____.....13
D13	Si vous aviez une question sur comment ou de quoi nourrir (NOM), à qui vous adresseriez-vous le plus souvent? **(CHOISIR UNE SEULE REPONSE)**	☐ Médecin.....1 ☐Infirmière .....2 ☐ Sage-femme.....3 ☐ Autre personnel médical.....4 ☐ Médecin-feuille .....5 ☐ Accoucheur traditionnel.....6 ☐ Grand-mère.....7 ☐ Belle-mère .....8 ☐ Sœur ou belle-sœur.....9 ☐ Ami.....10 ☐ Personnes âgées de la communauté…11 ☐Pere.....12 ☐ Autre _____.....13

B. Focus Group Discussion Guide

L' Introduction

Merci pour votre participation et bienvenu à la discussion aujourd'hui. Je m'appelle _____ et je travaille pour Unicef. Nous travaillons avec le ministère de la santé publique et de la population pour apprendre comment les mères soignent leurs enfants, particulièrement leurs pratiques de l'alimentation. Pendant les prochaines semaines nous allons conduire les discussions en group avec les mères pour apprendre plus sur les pratiques d'allaitement dans les communautés et pour mieux comprendre ce qu'influence leur choix. Nous espérons que ce que nous apprenons ici peut aider à améliorer les services.

Avant de commencer, laissez-moi décrire comment nous allons conduire cette discussion. Comme nous avons déjà dis, votre participation aujourd'hui est complètement volontaire. Vous êtes libre de ne pas répondre à une question ou de partir à n'importe quel temps. Toutefois, nous attachons de l'importance à vos opinions – vous êtes les expertes et nous sommes ici pour apprendre de vous. Il n'existe pas les réponses correctes ni des réponses incorrectes. Nous essayons simplement de mieux comprendre vos expériences et vos opinions. S'il vous plait n'hésitez pas de ne pas être d'accord avec quelqu'un d'autre mais nous vous demandons de respecter les points du vues des autres participants. Nous aimerions que cette discussion soit sans caractère officielle donc n'attendez pas que je vous appelle. Si vous avez quelque chose à dire s'il vous plait dire ce que vous pensez. Si vous ne comprenez pas une question demandez-moi une clarification. Nous vous demandons de parler une participante à la fois pour que nous ne manquions rien. Nous vous demandons aussi de ne pas partager vos pensées avec vos voisines mais de parler au groupe.

Pendant la discussion _____ vas prendre des notes et m'aider de se souvenir si j'avais manqué quelque chose. Pour que nous ne manquons rien et pour que _____ ne pas devoir d'enregistrer toute la discussion à la main, nous aimerons enregistrer en audio la discussion. La discussion va rester complètement confidentielle. Nous ferions référence à vous seulement avec votre pseudonyme ; toute l'information qui peux servir à vous identifier sera enlever de transcrit et de l'enregistrement sera détruit. Tous, les documents seront gardés dans un endroit sécurisé ou seulement les chercheurs vont avoir l'accès.

Cette discussion est unique et elle va probablement durer une heure ou une heure et demi. Est-ce que il y a des questions avant que nous commençons ?

Nous allons maintenant demander tout le monde s'ils sont d'accord de participer dans cette discussion et d'avoir la discussion enregistrer en audio.

II. Warm up

Alors, nous allons commencer par nous présenter. S'il vous plait présentez-vous même avec votre pseudonyme.
Maintenant que tout le monde a choisi leurs noms. S' il vous plait partager avec le group l'âge de votre enfant / vos enfants. Est-ce que quelqu'un a une histoire drôle de leurs enfants ? Quelque chose qu'il / elle a fait récemment ?

III. Connaissances et décision sur l'alimentation

Pouvez vous me dire quelques conseilles que vous avez entendu à propos de l'allaitement ou comment nourrir votre enfant?
Dans cette communauté, ou est ce que les femmes obtiennent l'information à propos de l'alimentation des jeunes enfants ?
Quand est-ce que les femmes reçoivent cette information ?
Dans cette communauté, qui décide comment les enfants sont nourris ?

IV. Initiation précoce de l'allaitement?

Qu'est ce vous faits avec le bébé immédiatement après sa naissance? (PROBE : et puis ?)
Qu'est-ce que les bébés boivent et mangent normalement après l'accouchement ?
Quand est-ce qu'un bébé ne sera pas nourri de cette façon ?
Quand est-ce que les femmes allaitent leurs enfants pour la première fois ? Est-ce que cela dépend de l'endroit où la femme a accouchée ?

V. Perceptions de l'allaitement

Connaissez-vous des mères qui ont voulu pratiquer AME jusqu'à 6 mois mais ne pouvez pas ?
Qu'elle est l'effet de l'allaitement sur le bébé ? (PROBE : la santé, la croissance, le comportement, le développement cognitif, le lien affectif entre l'enfant et la mère)
Qu'est-ce qui se passe avec les enfants qui ne sont pas allaités ?
Qu'elle est l'effet de l'allaitement sur la mère ? (PROBE : la santé, les émotions, le temps, l'emploi, le lien affectif entre l'enfant et la mère)

VI. Pratique d'allaitement maternel exclusif

Pouvez- vous me dire les conseilles que vous avez entendu à propos de l'allaitement maternel exclusif ?
Est-ce que l'allaitement maternel exclusif est un fait courant dans votre communauté ?
Pourquoi est-ce que les mères quelque fois ne choisissent pas de pratiquer l'allaitement maternel exclusif ou d'arrêter avant 6 mois?
Comment les femmes décident de donner les liquides ou la nourriture à part de lait maternel à leurs enfants ? (PROBE : la décision est-elle fondé sur les besoins de la mère ? les besoins de l'enfant ?)
Est-ce que il y a les situations / les raisons de ne pas téter une enfant ? (PROBE : la chaleur, stress mauvais humeur, devenir enceinte) ?

Pourquoi il ne faut pas téter dans ces situations ?

VII. Alimentation artificielle

Est-ce que les femmes donnent à leurs enfants le lait en poudre ? Ou est-ce que les femmes obtiennent le lait en poudre ?

Pouvez- vous me dire les effets pour l'enfant, la mère, ou les deux si les femmes choisissent d'utiliser le lait en poudre ? (PROBE : la nourriture de la mère, la sante, les émotions, le temps, l'emploi, le lien affectif entre l'enfant et la mère)

Comment est-ce que les femmes préparent-elles le lait en poudre ?

VIII. Alimentation de complément

Souvent les mères décident de donner autre liquides avant 6 mois. Pourquoi l'enfant a-t-il besoin d'autres liquides ?

Comment est-ce que les femmes font-elles la décision d'introduire les aliments solides de complément ?

Quels aliments est-ce que les femmes typiquement introduisent au début ?

Pouvez-vous me dire les effets pour l'enfant après les mères introduisent les aliments solides de complément ?

X. Efficacité personnel

Est-ce que il y a les situations pendant lesquelles vous pensez qu'il n'est pas une bonne idée pour les mères d'allaiter ?

Est-ce que il y a les situations pendant lesquelles les mères veulent allaiter mais ne peuvent pas ?

Est-ce que il y a les situations pendant lesquelles les mères trouvent qu'il est plus facile d'allaiter que d'autres ? Qu'est-ce qui rend plus facile d'allaiter dans cettes situations ?

Est-ce que les femmes ici jamais utilise les nourrices ?

XI. Vignettes

« Je vous présente Lise et son bébé. Il n'a que sept jours. Elle vous dit qu'elle veut allaiter mais elle pense qu'elle n'as pas assez du lait maternel. Qu'est-ce que vous allez lui dire ? »

« Je vous présente Rachel. Elle a un bébé qui a 4 mois. Elle allaite sa fille mais elle donne aussi de la bouillie. Sa fille avait eu la diarrhée pour les 4 derniers jours et Rachel ne sais pas quoi faire. Qu'est-ce que vous allez lui dire aussi?

« Je vous présente Margot. Elle a un bébé qui a 2 mois. Elle a le sentiment que son lait maternel n'est pas bon parce qu'elle n'a pas bien mangé récemment. Elle veut arrêter d'allaiter son fils et commencer à utiliser du lait en poudre. Qu'est-ce que vous allez lui dire ? »

Fermeture et Fin

« Je n'ai pas d'autres questions pour vous aujourd'hui »
« Est-ce qu'il y d'autres thèmes ou sujets que vous voudriez traiter aujourd'hui que nous n'avons pas encore discuté ? »
« Est-ce qu'il y a des choses que vous voudrez ajouter à propos de choses que nous avons déjà discuté aujourd'hui ? »

« Merci beaucoup d'avoir pris du temps de participer dans la discussion aujourd'hui. Cette discussion était excellente et nous apprécions l'information et les expériences que vous avez partagées avec nous. »