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# Infant Feeding Practices in Lubumbashi, Democratic Republic of Congo

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**Abstract**

Infant Feeding Practices in Lubumbashi, Democratic Republic of Congo

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**Background:** Breastfeeding is, in many ways, beneficial for both mother and child. The study was aimed primarily to describe infant feeding practices in Lubumbashi, Democratic Republic of Congo (DRC). Secondly, the study was aimed to describe the socioeconomic and demographic characteristics of infants' families in Lubumbashi and to investigate the degree to which socioeconomic index and age of the mother predict exclusive breastfeeding.

**Methods:** Seven hundred seventy-four women participated in a cross-sectional study within seven municipalities in Lubumbashi, Haut-Katanga province. Women responded to a household survey questionnaire containing information on socio-demographic and infant feeding practices.

**Results:** Only 26% of respondents exclusively breastfed their babies during the first six months after delivery, confirming the data in the literature affirming that exclusive breastfeeding remains low in Africa (Darmstadt et al., 2005). However, almost half of the women in Lubumbashi (48%) exclusively breastfed the child during the first week after delivery. Water (47%) and fufu (9%) were the most common complementary food given before the age of 6 months. The age of the infants varied from 6 months to 24 months, with a median of 12 months. Both mother's age and socioeconomic index were not significant predictors of exclusive breastfeeding (p-value = 0.245). Finally, when asked when the baby should be weaned, most respondents estimated that the ideal age of weaning for the infant should be 24 months.

**Conclusions:** The prevalence of exclusive breastfeeding in Lubumbashi was low, although almost half of the women interviewed admitted having given breast milk to the infant. The findings also acknowledged that the introduction of complementary food the infant diet is associated with the mother's perception of the infant's hunger and satiety cues. Further research is needed to help understand the reasons behind the infant feeding practices in Lubumbashi. This could be an opportunity for an in-depth study to explore the relationship between feeding practices and malnutrition in this specific population.

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## Chapter 1. INTRODUCTION

Feeding consists of the ingestion of food capable of supplying the body with the necessary ingredients for nutritional needs for its proper functioning. Breastfeeding provides to newborns and infants the required nutrients for their cognitive and physical growth. Human milk continues to provide substantial amounts of essential nutrients well beyond the first year of life, especially protein, fat, and most vitamins (Dewey, 2001). This nutritious contribution, far from being insignificant, constitutes an essential foundation of the immune development of the child. Findings from literature review and meta-analysis "support a recommendation of early initiation of breastfeeding as an intervention to reduce neonatal mortality and morbidity in low and middle-income countries" (Debes, Kohli, Walker, Edmond, & Mullany, 2013). Moreover, Roberts (2013) recognizes that "improvements in rates of exclusive and continued breastfeeding can contribute to the reduction of child mortality inequalities in developing countries"(Roberts, Carnahan, & Gakidou, 2013).

However, a study on barriers and facilitators to optimal infant feeding practices in South Kivu, Democratic Republic of Congo (DRC) recognized the role of "structural factors, especially long hours working in agricultural fields, impeded mothers' ability to feed their children optimally" (Burns et al., 2016). These findings from the study in the DRC associated with guidelines from the World Health Organization (WHO) support a recommendation of early initiation of breastfeeding as an intervention to reduce neonatal mortality and morbidity in low and middle-income countries (Debes et al., 2013).

In the DRC, eating habits differ according to the tribes and customs. We can imagine how these differences in feeding practices have, at a certain level, an influence on infant feeding

practices. Newborn and infant feeding practices differ depending on the context and are sometimes influenced by socioeconomic factors (Onah et al., 2014). The mother's subjective assessments of the child's satiety also play an essential role in the decision to administer complementary foods to supplement breast milk. The mother can decide to give complementary foods when she considers that the child is still hungry despite the breast milk she has just given him.

It is all of these factors influencing infant feeding practices that our study was intended to describe, by analyzing the data collected during a survey carried out in Lubumbashi, in the Haut-Katanga province.

## 1.1 BACKGROUND

Breastfeeding is, in many ways, beneficial for both mother and child. The offer of human milk (through breast or not) constitutes a fundamental step towards the survival and quality of life of children in their first years of life (Del Ciampo & Del Ciampo, 2018). According to Prel et al. (2016), breastfeeding and "proper infant nutrition promote healthy growth and development and lower the risk of disease in later life" (Prell & Koletzko, 2016). Early initiation of breastfeeding has been reported to have many benefits for both mothers and infants. A review of the psychological effects of breastfeeding on children and mothers revealed that beyond the improvement of the mother-child bond, breastfeeding has critical and far-reaching psychological effects in the newborn and the mother (Krol & Grossmann, 2018).

In newborns and infants, breastfeeding has been associated with improved cognitive performance and socio-emotional responses. Breastfed infants tend to gain less weight and usually are leaner than are formula-fed infants in the second half of infancy (Dewey, 2001). In

the mother, breastfeeding reduces physiological stress, influences mood and facilitates a positive effect which leads to the emotional attachment of the newborn to its mother. This instinctive attachment improves the mother's sensitivity to the care given to the child (Khan, Vesel, Bahl, & Martines, 2015; Krol & Grossmann, 2018; Reiner et al., 2019).

Due to the many benefits of breastfeeding, the WHO and the American Academy of Pediatrics (AAP) recommend that infants should be exclusively breastfed during the first six months of life, followed by breastfeeding along with complementary foods until two years of age or older (Wallenborn, Ihongbe, Rozario, & Masho, 2017). Moreover, achieving Sustainable Development Goals (SDG) two and three require the promotion of breastfeeding and promoting adequate feeding practices to reduce the burden of malnutrition and the consequent diseases in infants and newborns. These goals are:

- Goal 2: "End hunger, achieve food security, and improve nutrition and promote sustainable agriculture" (Morton, Pencheon, & Squires, 2017). Human milk addresses the nutritional needs of newborns and infants. Breastfeeding practices ensure safe, nutritious, and sufficient food for the newborn and the infant up until six months.
- Goal 3: "Ensure healthy lives and promote well-being for all at all ages" (Morton et al., 2017). Proper feeding practices help to prevent deaths from malnutrition. Nutritional deficiencies predispose to illnesses that are fatal for the newborn and the infant.

Breastfeeding helps prevent many of these diseases, especially in newborns and infants.

Knowledge of breastfeeding benefits can significantly influence infant feeding practices (Del Ciampo et al., 2018). However, the lack of proper nutritional practices can lead to the occurrence of malnutrition. Sirasa et al. (2019) investigated the family and community factors shaping the

eating behavior of preschool-aged children in low and middle-income countries. They found that "low and middle-income countries are experiencing the burden of malnutrition which is, at least in part, attributable to changes in eating behaviors of children under age five" (Sirasa, Mitchell, Rigby, & Harris, 2019).

Among the changes in eating behavior is, first of all, the abandonment of exclusive breastfeeding in children under two years of age. Second, the lack of nutritional knowledge from parents and family members, whether on the nutritional value of food or on the quantity to be given according to the age and needs of the child. This situation, combined with socioeconomic conditions, has contributed to the emergence of chronic malnutrition among children. Improving the nutritional status of infants and young children in developing countries depends to a significant extent on the adoption of optimal nutrition-related practices within the context of the household (Aubel, 2012; MacDonald, Aubel, Aidam, & Girard, 2020). Household members, especially grandparents, although often not mentioned, play a critical role in infant feeding practices, as they transmit traditions that influence breastfeeding in the household (Aubel, 2012; Ferreira, Piccioni, Queiroz, Silva, & Vale, 2018; MacDonald et al., 2020).

Exclusive breastfeeding, combined with full immunization coverage, is the most effective strategy for preventing infant mortality (Akachi, Steenland, & Fink, 2017; Darmstadt et al., 2005; Qazi et al., 2015; Reiner et al., 2019). However, as Reiner (2019) and his team pointed out, despite the benefits of exclusive breastfeeding, "only 37% of infants under six months of age in Africa were exclusively breastfed in 2017" (Bhattacharjee et al., 2019; Reiner et al., 2019). Breastfeeding remains an effective intervention for child health that does not require extensive health system infrastructure. National estimates of exclusive breastfeeding in Africa, for

instance, showed a marked improvement in infant feeding practices from 2000-2017 (Bhattacharjee et al., 2019). Unfortunately, this improvement of infant feeding in Africa is still low compared to the WHO recommendations. The promotion of exclusive breastfeeding combined with healthy eating practices for mothers and children can help reduce inequalities in child mortality in Africa (Roberts et al., 2013).

The DRC is one of the countries with a high mortality rate among children under five. Malnutrition is one of the leading causes of death in the country (Mukuku et al., 2019), associated with other diseases such as diarrhea, pneumonia, and malaria, which are more frequent in children under five (Horwood et al., 2019; Mukuku et al., 2019). Inadequate feeding practices are one of the main factors that affect physical growth and mental development in many low-income settings (Horwood et al., 2019). These inappropriate feeding practices may be the cause of acute malnutrition in children, as demonstrated by a recent study carried out in Lubumbashi in the DRC in 2019. From that study, one of the factors influencing severe acute malnutrition was inadequate infant feeding practices, for instance, fewer than three daily meals, age at breastfeeding's cessation less than six months, or the age of introduction of complementary foods less than six months (Mukuku et al., 2019). Improving infant feeding practices could be one of the solutions to this problem of malnutrition.

In DRC and other low-income countries, more than half of infant mortality is associated with nutritional diseases (Gaskin, Nielsen, Willie, & Durant, 2014). Lubumbashi is the third-most populous city in the DRC behind Kinshasa and Mbuji-Mayi. Like all major cities in the DRC, severe acute malnutrition is a real problem (Kandala, Madungu, Emina, Nzita, & Cappuccio, 2011; Kanteng et al., 2014). Studies have identified critical influences on infant

feeding decisions and practices. These decisions are based on, among other things, the preconceptions of women about the benefits of breastfeeding, their perceptions of breastfeeding problems, and influential people such as parents (family) and elders (community). A study conducted in Lubumbashi in 2014 attempted to examine the reasons why women do not practice exclusive breastfeeding before six months. Several socio-cultural factors have been noted, associated with the subjective feeling of lack of infant satiety indicated by mothers, social pressures such as the needs for the wife to provide for the needs of the family in the same way as the husband through professional work, as well as medical reasons like HIV. It has emerged from this study that there is a need to improve mothers' perceptions of breastfeeding practice in Lubumbashi (Kanteng et al., 2014).

This study on infant feeding practices presents the situation of breastfeeding in Lubumbashi. This survey is an opportunity that can help to define infant feeding practices in the city of Lubumbashi. By exploring the socio-demographic characteristics of women in this city and their infant feeding practices, this survey could lay the foundations for more in-depth studies in order to identify the reasons for certain feeding practices among children. Several studies have shown factors that influence the mother's decision to breastfeed. These factors, in the context of low-income settings like Lubumbashi, can influence breastfeeding practices.

Apart from a better understanding of the realities of infant feeding practices, this survey could generate evidence of a better practice of infant feeding in an economic, political, social, and health context of precariousness, particularly to the context of the DRC.

## 1.2 STUDY OBJECTIVE

The main goal of our study was to assess infant feeding practices in Lubumbashi, DRC. From a cross-sectional survey, we described the socio-demographic characteristics of infants' families and described their infant feeding practices – specifically, the proportion that exclusively breastfed to six months and which foods were introduced first. Moreover, we answered the question of whether exclusive breastfeeding was influenced by the age of the mother and her socioeconomic index.

## Chapter 2. MATERIAL & METHODS

### 2.1 STUDY DESIGN & SETTING

This was a cross-sectional study. This study assessed infant feeding practices in Lubumbashi and was carried out in the health zones of the city of Lubumbashi. Lubumbashi, the capital of Haut-Katanga province, is a city located in the south-east of the DRC. It is the third-largest city in the DRC, and it is considered the economic and mining capital of the DRC. The health zone is the operational level of the health system in the DRC. It is a geographically limited area that covers a population between 150,000 and 200,000, depending on whether one is in urban or rural areas. A Health Zone is divided into health areas. It is in the health area that we find the functional unit of the health system of the DRC, that is the health center. The health area covers a population of approximately 20,000 inhabitants. The study was limited to six health zones (Lubumbashi, Kampemba, Katuba, Kenya, Rwashi, and Kamalondo) among the eleven health zones in the city of Lubumbashi.

## 2.2 SELECTION OF STUDY SUBJECTS

Seven hundred seventy-four women responded to a household survey on breastfeeding practices and infant nutrition in May 2017. The data came from questionnaires that the investigators used to collect information about the participants, including demographics, infant feeding history, and obstetric history. Data were collected by using a face-to-face interview during a house-to-house visit. A random walk selected households from a single entry point of the street, and one eligible participant was interviewed in each selected home. To identify households, the investigators subdivided the teams so that the first team surveyed households located on the avenue in the center of the health area, the second team surveyed the houses situated on the street on the outskirts of the health area, and the third team surveyed the houses located on the avenue between the center and the periphery of the health area.

On each street, the surveyors estimated the number of households and divided this number by 10 (number of households for the team). The choice of houses was made by zigzagging across the street, allowing them to obtain an equivalent number on each side of the street until reaching the tenth house. Once selected, an interviewer (a University of Lubumbashi public health student) provided the participants with information on the survey, and those who were interested in participating were asked to provide oral consent before responding to the questionnaire.

All participants responded to the same study questionnaire. The data collected during the survey included information on the geographical location of the participants and the socio-demographic characteristics of the households interviewed. Information on the mother's obstetric history and infant feeding practices, including, course of pregnancy, mode of delivery,

breastfeeding initiation, age at weaning, and other infant feeding practices during the first months of the newborn's life were collected as well. Eligibility criteria were being at least 18 years old at the time of the survey and having a child in the household aged between 6 months and 24 months. It was an anonymous paper-based survey, and all the respondents gave oral consent to participate in the study. The respondents to this survey were the mother of the infant or any family member found in the house who was eligible to participate (sister, grandmother, or any household woman who had had an infant).

The socioeconomic index was calculated based on the primary source of household water supply, the primary source of household light, the source of fuel used to prepare food in the household, goods, and furniture in the household, and type of toilet used in the household. We assigned a score of (-1) to (+1) to all the indicators, with (-1) being below average, 0 being average, and (+1) being above average. We then summarized them and created an index. From this index, we calculated the median. With the median, we categorized the socioeconomic index, assigning a value of low if the number was less than the median, medium if the socioeconomic index was equal to the median, and high if the socioeconomic index was above the median.

We did not explicitly ask whether a respondent exclusively breastfed in the first six months. Therefore, in order to estimate the number of respondents who exclusively breastfed before six months, we created a proxy variable. To create this proxy, we first identified the number of respondents who exclusively breastfed in the first week. Then, we isolated the ones that gave any liquid before six months. The liquid could be water, juice, cow's milk, soy, soup, tea, yogurt, honey, or any other liquid. Then, we created a variable that indicated whether any liquid was given to the infant before six months. After finding the number of respondents who gave the liquid before six months, we created a variable (following the same reasoning), this

time for any solid food given to the child before six months. The solid food could be fufu, porridge (soy, imported, or corn), meat, fish, rice, cereal, or any other solid food. Likewise, we created a variable that indicated whether any solid food was given to the child before six months. Respondents who reported that they gave only breastmilk in the first week and gave neither liquid nor solid food in the first six months were considered to have exclusively breastfed during the first six months of the infant's life. This number is the proxy that may be the best estimate of respondents who exclusively breastfed for the first six months.

### 2.3 STATISTICAL ANALYSIS

A total of 47 survey questions (including sub-questions) were coded, then analyzed with R studio. Questionnaires were completed on paper, entered by the primary data collection team into Epi Info, then converted to R file for analysis. Descriptive analyses were conducted using R Studio for Windows Version 3.5.1 - "Feather Spray" ([www.rstudio.com](http://www.rstudio.com)) Bivariate analysis was conducted using OpenEpi version 3.1 ([www.openepi.com](http://www.openepi.com)). Data were analyzed using univariate and bivariate analyses. At the univariate level, we determined the frequency distribution of the respondents across primary background characteristics such as the age of the respondent, her marital status, and many other characteristics. The bivariate analysis examined the association between the study's primary explanatory variables (Mother's Age, Employment Status, and SES index) and the infant feeding practices indicators (weaning age, the choice to breastfeed exclusively). From the explanatory variables, we determined the frequency distribution, the relative risk, and the confidence interval.

## Chapter 3. RESULTS

### 3.1 CHARACTERISTICS OF THE STUDY SAMPLE

Table 1 presents an overview of the demographic characteristics of the survey sample. Seven hundred and seventy-four respondents aged 18 to 70 years (median 28 years) completed the questionnaire survey. At the time of the survey, 34% of the respondents lived in the commune of Kampemba, 20.3% in Katuba, and only 9.9% lived in the commune of Lubumbashi. The average number of people living in the household was 6, and we found three families living with 17 people. Of the respondents, 3.8% of respondents reported that they never went to school, 18.7% reported having an elementary level of education, 67.6% reported a high school level of education, and 10.0 % of respondents reported a college or university level.

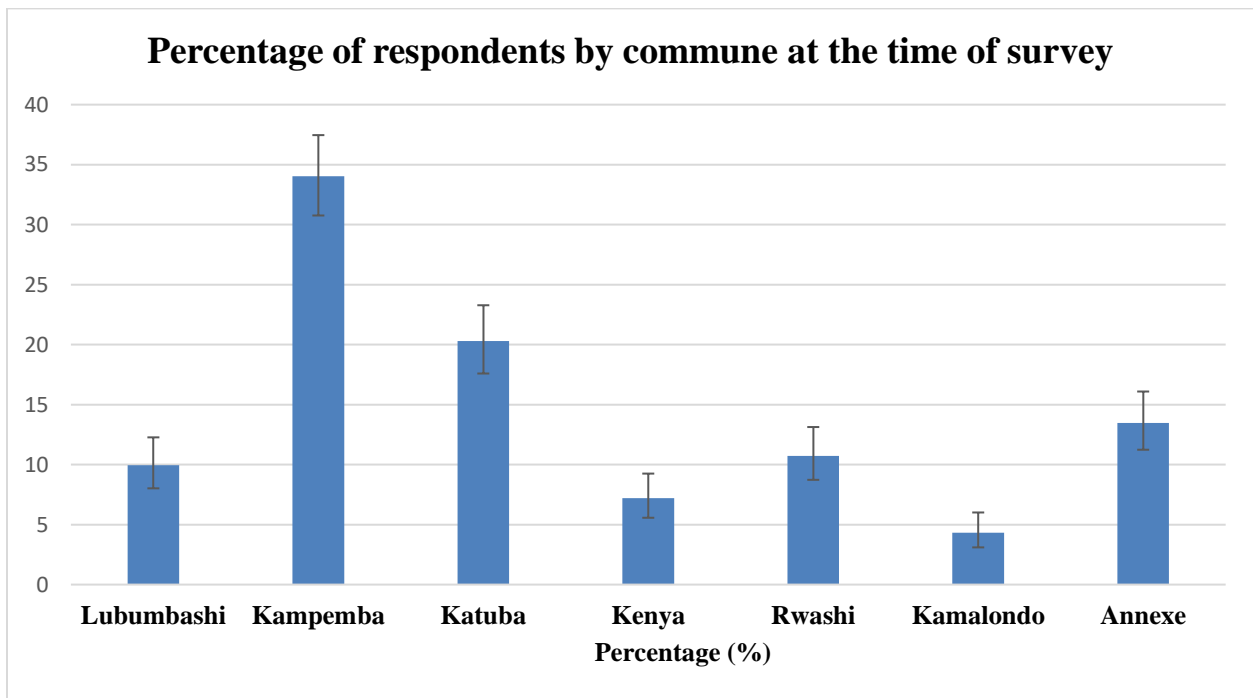
Table 1 Demographic Characteristics of the surveyed population in Lubumbashi

<u>Characteristics</u>	<u>Frequency (%)</u>	<u>Mean (SD)</u>
<b>Age</b>		
- Mean (in years) of the respondents (n = 774)		28.0 years (6.13)
<b>Commune where the mother lives (n = 764)</b>		
- Lubumbashi	76 (9.9%)	
- Kampemba	260 (34.0%)	
- Katuba	155 ( 20.3%)	
- Kenya	55 ( 7.2%)	
- Rwashu	82 (10.7%)	
- Kamalondo	33 (4.3%)	
- Annex	103 (13.5%)	
<b>Marital status (n = 773)</b>		
- Married	715 (92.4%)	
- Unmarried	58 (7.6%)	
<b>Highest level of education (n = 772)</b>		
- Never went to school	29 (3.8%)	
- Elementary school	144 (18.7%)	
- High school	522 (67.6%)	
- College and university	77 (9.9%)	
<b>Mean number of people living in the household (n = 774)</b>	6.5 (2.6)	
<b>Mean age of the respondent's partner in years (n = 767)</b>	35.0 years (6.9)	

SES index	
- Above median (>4)	360 (46.5%)
- Median (=4)	107 (13.8%)
- Below median (<4)	281 (36.3%)

Fifty-three point nine percent of the respondents did not report income-generating activities, while 27.6% were vendors, 2.5% were farmers, 2.3% worked in the public service, 2.3% worked in a public company, 1.9% worked in a private company, 6.5% were self-employed, 1.6% were students. Less than 1% did not report any occupation.

Figure 1 Percentage of respondents by commune at the time of the survey (n = 764)



Of the respondents, 56.3% said their partner had a high school diploma. 36.7% said their partner had a university degree (either associate or bachelor's degree), and 3.6% did not know their

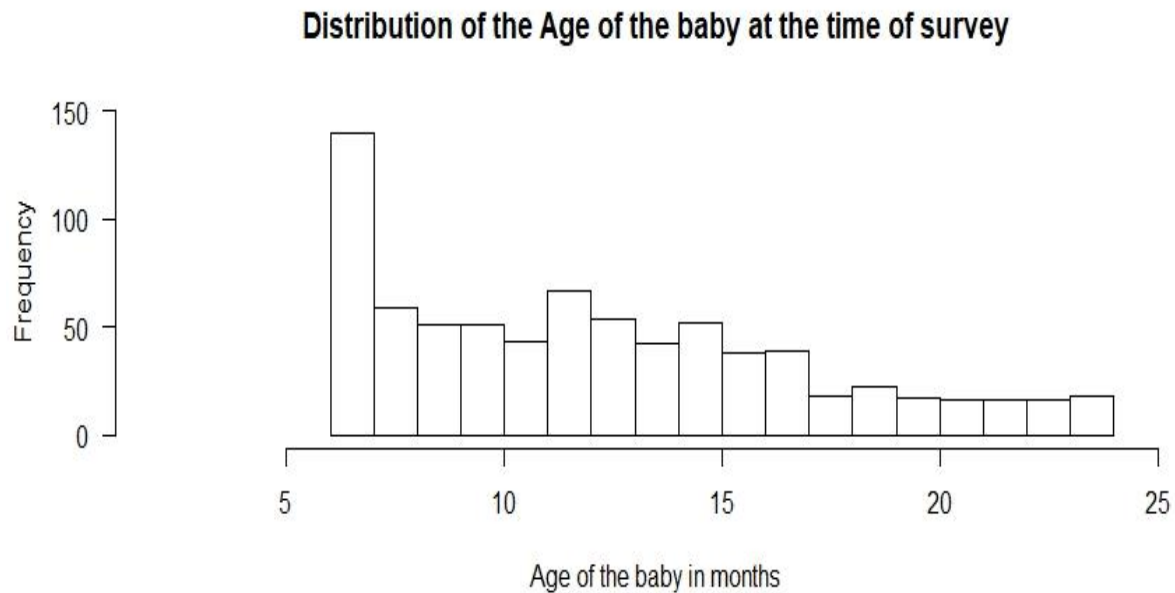
partner's level of education. Of the respondents, 66.8% were renting, 20.1% were owners, 12.8% lived in the family home, 0.3% did not report who was the owner of the house. Of the respondents, 70.5% said their primary source of water for their household was tap water. On the other hand, 23.9% of them said that they obtain water from a bore well.

### 3.2 OBSTETRIC HISTORY & INFANT FEEDING PRACTICES

The majority of women surveyed were married (92.4%) and attended antenatal care visits (92.9%) during their last pregnancy. Vaginal delivery was most common, with 94.4% of infants born that way. Of the respondents, 371 reported that they exclusively breastfed the baby in the first week (48%).

Concerning infant feeding practices, 438 surveyed women (56.6%) reported having given any liquid food (water, juice, cow milk, soy milk, soup, tea, yogourt, honey, and any other available liquid) to the infant before six months. On the other hand, only 207 surveyed women (26.7%) reported having given any solid food (fufu, soy porridge, imported porridge, corn porridge, meat, fish, rice, cereals, and any other available solid food) to the infant before six months. We created a proxy to better estimate how many respondents exclusively breastfed the child during the first week after delivery.

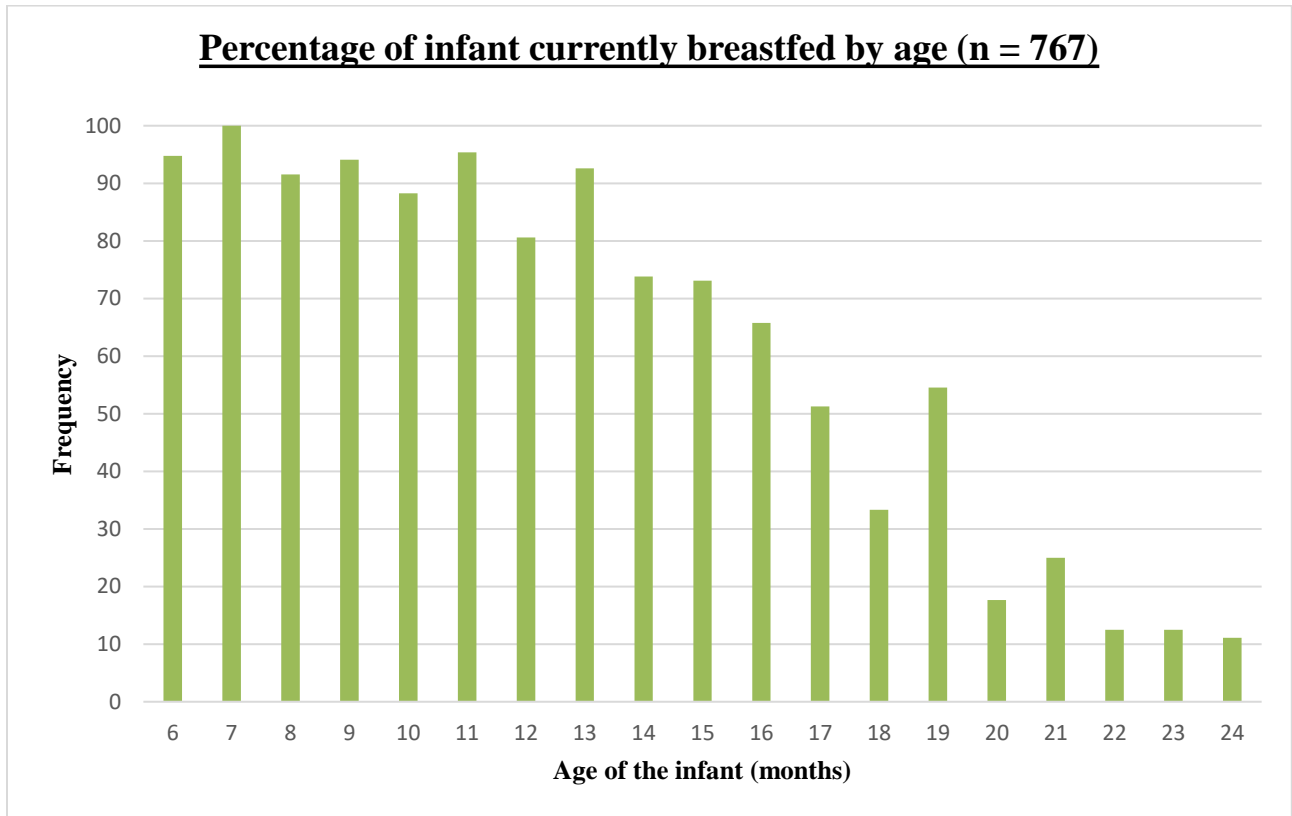
Figure 2 Distribution of Age of the baby at the time of the survey (n = 774)



In total, after cross-tabulation, it appeared that only 187 respondents (25%) have exclusively breastfed the baby during the first six months after delivery.

Of the 584 respondents who reported giving breastmilk in the past 12 hours, 86 (14.7%) said this was the only food they could get, 102 (15.5%) said the baby was hungry, and 300 (51.4%) said because breastmilk was nutritious. The average age of the baby at the time of the survey was 12.5 months (95% CI: 11-13).

Figure 3 Breastfeeding continuation (from 6 to 24 months)

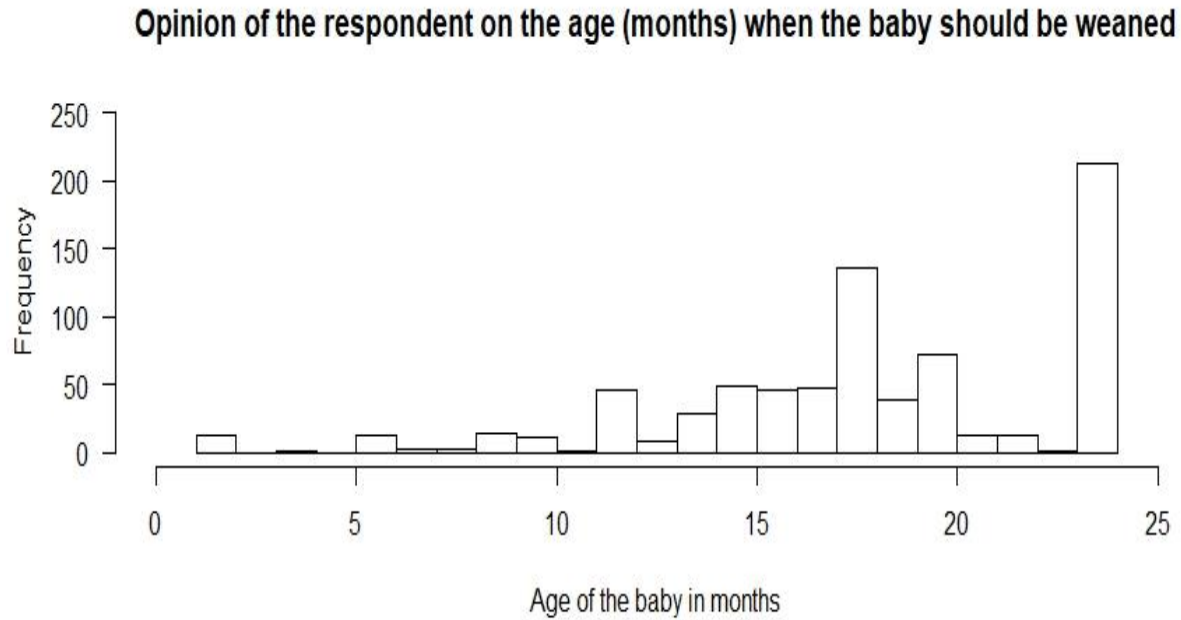


Out of 767 respondents, 212 (27.6%) estimated that 24 months is the ideal age at which a woman should stop breastfeeding the child. When asked what food to give when the baby stops breastfeeding, 213 out of 327 respondents (65.1%) said the infant should receive a variety of food, from vegetables to meat, including fufu, beans, and rice.

Out of 748 women, 716 (92.1%) did not exclusively breastfeed after the age of 6 months.

However, among the 187 who exclusively breastfed until six months, the proportion increased from low to high socioeconomic index, with a relative risk of exclusively breastfeeding of 1.45 in the middle socioeconomic index and high socioeconomic index 1.52 compared to the low socioeconomic index. However, neither the difference between the middle or the high and the low socioeconomic index was statistically significant (Table 2).

Figure 4 Distribution of weaning age (n = 772)



When asked for their opinion on exclusive breastfeeding, 713 out of 772 women (92.4%) did not choose to breastfeed after the age of 6 months exclusively. However, among the few who choose to breastfeed until six months exclusively, the proportion decreased from unemployed women to employed women, with a relative risk of 1 for unemployed women and 0.85 for employed women. However, this relative risk was not statistically significant (Table 3).

Also, when asked for their opinion on exclusive breastfeeding, 715 out of 774 women (92.4%) did not choose to breastfeed after the age of 6 months exclusively. Nevertheless, among the few who choose to breastfeed until six months exclusively, the proportion decreased from youngest age (18 to 24 years) to middle age (25 to 32 years), and increased from middle age to oldest age (33 years and above), with the relative risk of 0.6 in middle age, and 1 for the younger age

compared to 0.09 for the older age. However, neither the difference between the middle and the oldest age categories was statistically significant compared to the youngest age category.

Table 2 Feeding practices

<u>Variables</u>	<u>Frequency (%)</u>
<b>Difficulties understanding any of the feeding options chosen (n= 727)</b>	34 (4.7%)
- Yes	693 (95.3%)
- No	
<b>Estimated mean age of cessation of breastfeeding by mother</b>	18 months
<b>Reasons for giving breast milk to the baby in the past 12 hours (n = 584)</b>	86 (14.7%)
- This is the only food I could have	46 (7.9%)
- This is what he likes to eat	102 (15.5%)
- He was hungry	300 (51.4%)
- It is nutritious	2 (0.3%)
- It tastes good	28 (3.6%)
- I wanted to do it	
- Other:	4 (0.7%)
- Baby was constipated	3 (0.5%)
- Baby was crying	6 (1%)
- No reasons reported	
<b>Reasons for giving water to the baby in the past 12 hours (n = 592)</b>	67 (11.3%)
- This is the only food I could have	30 (5.1%)
- This is what he likes to eat	26 (4.4%)
- He was hungry	14 (2.4%)
- It is nutritious	6 (1%)
- It tastes good	50 (8.4%)
- I wanted to do it	1 (0.2%)
- He was constipated	398 (51.4%)
- No reasons reported	
<b>Reasons for giving fufu to the baby in the past 12 hours (n = 360)</b>	
- This is the only food I could have	82 (22.8%)
- This is what he likes to eat	46 (12.8%)
- He was hungry	209 (58.1%)
- It is nutritious	10 (2.8%)
- It tastes good	1 (0.3%)
- I wanted to do it	11 (3.1%)
- No reasons reported	1(0.3%)
<b>Utensil used to give fufu to the baby in the past 12 hours (n = 360)</b>	
- Spoon	6 (1.7%)
- Plate	168 (46.7%)
- Hands	166 (46.1%)
- No reasons reported	4 (1.1%)

Out of 722 women, 534 (73.9%) did not breastfeed until the age of 6 months exclusively. Among 188 respondents (28%) who chose to exclusively breastfeed until six months, the proportion increased slightly from low to high SES index, with the relative risk of 1.2 in both the middle SES and high SES compared to low SES. However, neither the difference between the middle or the high and the low SES was statistically significant.

Out of 751 women, 557 (74.2%) did not choose to breastfeed until the age of 6 months exclusively. However, among the few who chose to exclusively breastfeed until 6 months, the proportion decreased from youngest age (18 to 24 years) to middle age (25 to 32 years), and oldest age (33 years and above), with the relative risk of 0.9 in middle age, and 0.8 for the older age compared to 1 for the younger age. However, neither the difference between the middle and the oldest age categories was statistically significant compared to the youngest age category.

**Table 3 Opinion on Weaning Age and Choice for Exclusive Breastfeeding**

<i>Variable</i>	<i>Opinion on Weaning Age</i>					<i>Choice to exclusively breastfeed</i>				
	<b>0-6 months</b>	<b>&gt; 6 months</b>	<b>Risk</b>	<b>RR</b>	<b>95% CI</b>	<b>Yes</b>	<b>No</b>	<b>Risk</b>	<b>RR</b>	<b>95% CI</b>
<i>Mother's Age</i>										
- 18-24 years	9 (1.2%)	219 (28.6%)	0.039	1	N/A	23 (2.9%)	209 (27.0%)	0.099	1	NA
- 25-32 years	13 (1.7%)	357 (46.5%)	0.035	0.9	0.4-2.0	21 (2.7%)	351 (45.3%)	0.056	0.6	0.3-1.0
- > 32 years	4 (0.5%)	165 (21.5%)	0.024	0.6	0.2-2.0	15 (1.9%)	155 (20.0%)	0.088	0.9	0.5-1.7
<i>Employment status</i>										
- Unemployed	13 (1.7%)	400 (52.3%)	0.031	1	N/A	34 (4.4%)	382 (49.5%)	0.08	1	N/A
- Employed	13 (1.7%)	339 (44.3%)	0.037	1.2	0.5-2.5	25 (3.2%)	331 (42.9%)	0.07	0.85	0.5-1.4
<i>SES index</i>										
- High	7 (0.9%)	288 (38.9%)	0.024	1	N/A	19 (2.5%)	278 (37.2%)	0.064	1	N/A
- Middle	4 (0.5%)	103 (13.9%)	0.037	1.6	0.5-5.3	10 (1.3%)	97 (13.0%)	0.093	1.5	0.7-3.0
- Low	14 (1.9%)	325 (43.9%)	0.041	1.7	0.7-4.3	30 (4%)	314 (42.0%)	0.097	1.5	0.5-1.8

Out of 767 women, 741 (96.6%) weaned after the age of 6 months, but among the few who weaned before six months, the proportion decreased from the youngest age (18 to 24 years) to

the oldest age (33 years and above), with the relative risk in middle age (25 to 32 years) 0.9 and the older age 0.6 compared to the younger age. However, neither the difference between the middle and the oldest age categories was statistically significant compared to the youngest age category.

Out of 741 women, 716 (96.6%) weaned after the age of 6 months, but among the few who weaned before six months, the proportion increased from low to high SES index, with the relative risk in middle SES 1.6 and high SES 1.7 compared to low SES. However, neither the difference between the middle or the high and the low SES was statistically significant.

Out of 765 women, 739 (96.6%) weaned after the age of 6 months, but among the few who weaned before six months, the proportion increased from unemployed to employed women, with the relative risk of 1.2 for employed women compared to unemployed women. However, this relative risk was not statistically significant.

Table 4 Exclusive Breastfeeding before six months

<i>SES Index</i>	<i>Exclusive Breastfeeding</i>				
	<b>Yes</b>	<b>No</b>	<b>Proportion (Risk)</b>	<b>RR</b>	<b>95% CI</b>
<i>Low</i>	64	213	0.23	1	NA
<i>Middle</i>	27	71	0.28	1.2	0.8-1.8
<i>High</i>	97	250	0.28	1.2	0.9-1.6
<b>Total</b>	188	534			

<i>Age of the mother</i>	<i>Exclusive Breastfeeding</i>				
	<b>Yes</b>	<b>No</b>	<b>Proportion (Risk)</b>	<b>RR</b>	<b>95% CI</b>
<i>18 to 24 years</i>	65	165	0.28	1	NA
<i>25 to 32 years</i>	91	265	0.26	0.9	0.7-1.2
<i>33 and above</i>	38	127	0.23	0.8	0.6-1.2
<b>Total</b>	194	557			

## Chapter 4. DISCUSSION

This study examined infant feeding practices in Lubumbashi, DRC. Although descriptive and must be interpreted with caution, the findings are consistent with the literature. First, almost half of the women in Lubumbashi (48%) exclusively breastfed the child during the first week after delivery. However, the small number of respondents (26%) who exclusively breastfed during the first six months confirms the data in the literature affirming that exclusive breastfeeding remains low in Africa (Darmstadt et al., 2005). Our findings are also similar to the findings from Dhakal *et al.*, (2017) in the Kwango district (central DRC) in which 49.2% of mothers have exclusively breastfed their children (Dhakal, Lee, & Nam, 2017). The results are comparable to a similar study on factors affecting exclusive breastfeeding among women in Tanzania a study in which the "perception that mothers' breast milk is insufficient for child's growth, child being thirsty and the need to introduce herbal medicine for cultural purposes were among the important factors for early mixed feeding" (Maonga, Mahande, Damian, & Msuya, 2016). Although the recent study in Ethiopia regarding the predictors of optimal breastfeeding practices looked at feeding practices at the age of 2 years, their results highlight the need for optimal breastfeeding practices. UNICEF defines optimal breastfeeding practices as "the initiation of exclusive breastfeeding from the first hour of birth until six months of age, and then the introduction of complementary foods alongside continued breastfeeding up to 2 years of age or beyond" (Awoke, Tekalign, & Lemma, 2020).

Second, infant feeding practices in Lubumbashi are intimately associated with the conceptions and information received by the mother while pregnant during prenatal visits. The results showed that most of the respondents (92.9%) chose a feeding habit based on the

information received in the health center during the antenatal care visit. The survey did not, unfortunately, allow us to know if the family had, in any way, influenced the choice of the baby's feeding mode. Also, complementary feeding was introduced early in most cases, based on the mother's perception of hunger and satiety cues. Seventeen percent of the respondents reported given other liquids to the baby as early as one week after childbirth. The results supported the findings from a previous study in which the causes of malnutrition were among other things age of breastfeeding's cessation less than six months, or the age of introduction of complementary foods less than six months (Mukuku et al., 2019). In our findings, the respondents believed that the baby was not satisfied with breast milk, and they offered something additional. This complementary food was varied, ranging from pure water to solid food. The perception of the baby's satiety by the mother was a significant reason for the introduction of complementary feeding.

A systematic review and meta-analysis confirm our findings on early initiation of breastfeeding. In our finding, 55.4% of women breastfed within an hour after delivery, and 29.4% breastfed between 1 hour and 6 hours after delivery, which is nearly 90% of women who breastfed within 24 hours after delivery. This systematic review asserts that "exclusively breastfed neonates had a lower risk of mortality and infection-related deaths in the first month than partially breastfed neonates. Exclusively breastfed neonates also had a significantly lower risk of sepsis, diarrhea, and respiratory infections compared with those partially breastfed" (Khan et al., 2015).

Third, the findings of the bivariate analysis support the assertion that women with a high socioeconomic index tend to exclusively breastfeed the infant longer compared to other women with middle and low socioeconomic index. Also, women of the average age between 25 and 32

years exclusively breastfed longer compared to older women who breastfed less. Regarding the choice to breastfeed exclusively, young respondents (18 to 24 years) reported their intention to breastfeed exclusively. Likewise, unemployed respondents or those with a high socioeconomic index have chosen to breastfeed exclusively. These results corroborate Balogun et al. (2015) findings that employment status was among the factors influencing the early cessation of exclusive breastfeeding during the first six months of life in developing countries (Balogun, Dagvadorj, Anigo, Ota, & Sasaki, 2015; Balogun et al., 2016).

Fourth, in Lubumbashi, most of the respondents expressed the desire that breastfeeding should be the primary way of feeding the baby at least until six months. This desire is critical as it corroborates with data from several literature reviews stressing the importance of exclusive breastfeeding in reducing child mortality (Sankar et al., 2015; Sinha et al., 2015). Most of the respondents estimated that weaning age should be at 24 months. However, the notion of weaning is understood differently among the respondents. Complementary food was introduced before six months, mostly because the mother felt that the baby was still hungry. Most of the residents lived in the urban area of Lubumbashi, have a large family (six or more members), have finished high school, and have a socioeconomic index above the median.

Admittedly, the study has some limitations. The data are cross-sectional; as a result, causal connections between exclusive breastfeeding and the socioeconomic index could not be established. Recall bias was another potential limitation since the survey relied on a historical account of when the respondents introduced solid food on infant's diet. Information on infant feeding practices and the introduction of complementary foods was based on recall since birth, and some respondents might not remember when they specifically introduced other liquids or

solids. However, the recall bias was non-differential because it was unclear whether the women who breastfed had a different recall compared to those who did not. Selection bias was another potential limitation because it was unclear whether the investigators asked the question only to breastfeeding women or whether they also asked the question for women of childbearing age found in the household. On specific questions concerning breastfeeding practices, there were missing data, and it was difficult for us to know if these missing data were "NO" from the respondents. The level and knowledge of the enumerators was also a limiting factor as the data collectors were students who had limited experience and who may not have been closely supervised during data collection.

Despite these limitations, this study remains an essential contribution toward understanding infant feeding practices in Lubumbashi. It paves the way for other, more in-depth studies to better understand the realities of breastfeeding practices among women in Lubumbashi, despite the particularly difficult economic situation in the DRC, accentuated by the COVID-19 pandemic.

## Chapter 5. CONCLUSION

The primary objective of this study was to assess infant feeding practices in Lubumbashi. The findings from this cross-sectional study have demonstrated that the prevalence of exclusive breastfeeding in Lubumbashi was low, although most women acknowledged giving breast milk to the infant. The introduction of complementary food should be delayed to at least six months. As breastfeeding decisions are a dynamic process, this study has shown that women recognize the benefits of exclusive breastfeeding in children. However, between recognizing the benefits and putting them into practice, there is a long way to go. We can imagine, without, however, being entirely sure that some factors, particularly socioeconomic, can explain this gap between the recognition and implementation of appropriate infant feeding practices. It is, therefore, critical to encourage exclusive breastfeeding at least up to six months and to discourage the introduction of complementary food before six months.

This study offers an opportunity for the health authorities of Lubumbashi to propose policies that will improve exclusive breastfeeding. Community sensitization could be the first step. Specialized programs of the Ministry of Health (National Reproductive Health Program and National Nutrition Program) could also use this study as a basis for more in-depth analysis to identify the root causes of the low rate of exclusive breastfeeding within the population of Lubumbashi. Further research is needed to help understand the reasons behind these inappropriate feeding practices. This could be an in-depth exploration through a qualitative study in order to understand why the women of Lubumbashi adopt specific feeding behaviors. Also, it could be an opportunity to explore the relationship between feeding practices and malnutrition among this specific population.

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# APPENDIX

## TABLES & FIGURES

Figure 5 Determinants and Interventions, Infant Feeding (Rollins et al., 2016)

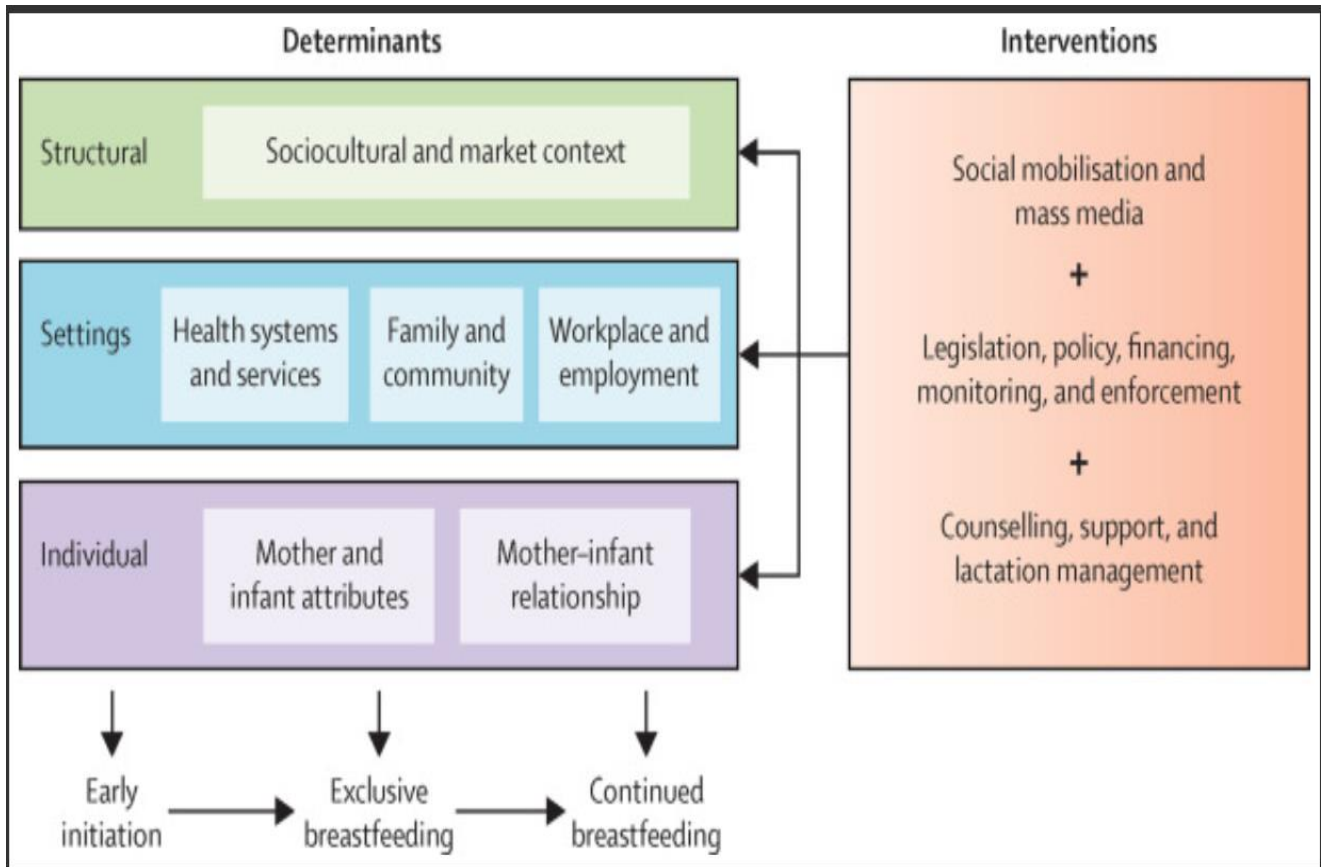


Figure 6 Conceptual Framework of Infant feeding practices in Lubumbashi

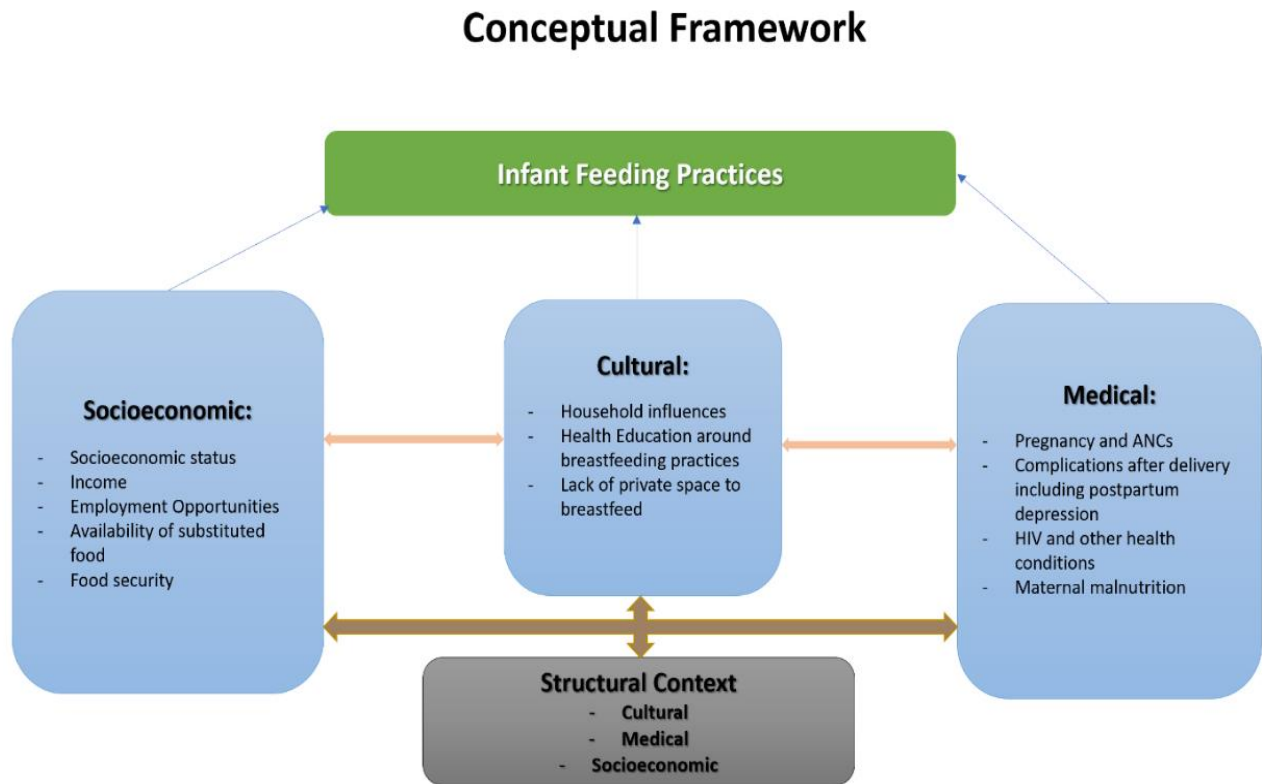


Table 5 Demographic Characteristics of the surveyed population in Lubumbashi

<b>Variables</b>	<b>Frequency (%) / Mean (SD)</b>
<b>Mean Age (in years) of the respondents (n = 774)</b>	28.0 years (6.13)
<b>Commune where the mother lives (n = 764)</b>	
- Lubumbashi	76 (9.9% )
- Kampemba	260 (34.0% )
- Katuba	155 ( 20.3%)
- Kenya	55 ( 7.2%)
- Rwashu	82 (10.7% )
- Kamalondo	33 (4.3% )
- Annex	103 (13.5% )
<b>Marital status (n = 773)</b>	
- Married	715 (92.4%)
- Unmarried	58 (7.6%)
<b>Highest level of education (n = 772)</b>	
- Never went to school	29 (3.8%)
- Elementary school	144 (18.7%)
- High school	522 (67.6%)
- College and university	77 (9.9%)
<b>Occupation (n = 772)</b>	
- Housework	416 (53.9%)
- Vendor	213 (27.6%)
- Agriculture	19 (2.5%)
- Public administration	19 (2.5%)
- Public company	18 (2.3%)
- Private company	15 (1.9%)
- Self-employed	54 (6.9%)
- Student	12 (1.5%)
- No occupation reported	6 (0.8%)
<b>House ownership status (n = 771)</b>	
- Renting	515 (66.8%)
- Owner	155 (20.1%)
- Live in a family house	99 (12.8%)
- Do not know	2 (0.3%)
<b>Relationship with the owner (n = 772)</b>	
- Spouse or partner	637 (82.5%)
- Sister	31 (4.0%)
- Daughter	31 (4.0%)
- Granddaughter	9 (1.2%)
- Self	40 (5.2%)
- Other:	
- In-laws	4 (0.5%)
- Aunt	2 (0.3%)
- Renting	3 (0.4%)
- No relationship reported	15 (1.9%)
<b>Mean number of people living in the household (n = 774)</b>	6.5 (2.6)
<b>Main source of household water supply (n = 762)</b>	
- Tap water	537 (70.5%)
- Water tanker	7 (0.9%)
- Dug well	182 (23.9%)
- Backwater	1 (0.1%)
- Open well	29 (3.8%)
- River	4 (0.5%)

- No water supply reported	2 (0.3%)
<b>Main source of household lighting (n = 763)</b>	
- Public electricity	582 (76.3%)
- Power generator	17 (2.2%)
- Rechargeable lamp	99 (13.0%)
- Storm lamp	13 (1.7%)
- Candle	23 (3.0%)
- Lantern	8 (1.0%)
- Other:	
- Torch	12 (1.6%)
- Solar panel	1 (0.1%)
- Battery lamp	3 (0.4%)
- Dynamometer	1 (0.1%)
- No lighting source reported	4 (0.5%)
<b>Sources used to prepare food in the household (n = 769)</b>	
- Public electricity/gas	58 (7.6%)
- Charcoal	707 (91.9%)
- Logs	3 (0.4%)
- Stubble	1 (0.1%)
<b>Goods and furniture in the household (yes/no)</b>	
- House	186 (24.0%)
- Refrigerator	275 (35.6%)
- Color TV	432 (55.8%)
- DVD reader	252 (32.6%)
- Cellphone	293 (37.9%)
- Vehicle (car, truck, van)	52 (6.7%)
- Computer	61 (7.9%)
- Bike	53 (6.8%)
- Motorcycle	110 (14.2%)
- Furniture	164 (21.1%)
<b>Type of toilet used in the household (n = 772)</b>	
- With flush	172 (22.3%)
- Turkish toilet	121 (15.7%)
- Without flush	229 (29.7%)
- Toilet with bowl	203 (26.3%)
- Elsewhere (non-conventional place)	17 (1.4%)
- No toilet reported	30 (3.9%)
<b>Mean age of the respondent's partner in years (n = 767)</b>	35.0 years (6.9)
<b>Highest level of education of the respondent's partner (n = 760)</b>	
- Never went to school	3 (0.4%)
- Elementary school	23 (3.0%)
- High school	428 (56.3%)
- College and university	279 (36.7%)
- Do not know	27 (3.6%)
<b>Partner's occupation (n = 769)</b>	
- Housework	10 (1.3%)
- Vendor	127 (16.5%)
- Agriculture	27 (3.5%)
- Public administration	97 (12.6%)
- Public company	55 (7.2%)
- Private company	99 (12.9%)
- Self-employed	271 (35.2%)
- Mining worker	16 (2.1%)
- Student	14 (1.8%)
- Other	44 (5.7%)

- Do not know	9 (1.1%)
<b>SES index</b>	
- Above median (>4)	360 (46.5%)
- Median (=4)	107 (13.8%)
- Below median (<4)	281 (36.3%)

Table 6 Characteristic of the respondent

Variables	Frequency (%)
<b>Number of live births (n = 774)</b>	
- 1 to 3 live births	435 (56.2%)
- 4 to 6 live births	272 (35.1%)
- 7 or more live births	67 (8.7%)
<b>Antenatal care attendance during the last pregnancy (n = 772)</b>	
- Yes	717 (92.9%)
- No	55 (7.1%)
<b>Place of birth (n = 770)</b>	
- Hospital/health center	750 (97.4%)
- Home/on the way to the hospital	20 (2.6%)
<b>Type of delivery (n = 765)</b>	
- Vaginal	722 (94.4%)
- C-section	40 (5.2%)
- Instrumental	3 (0.4%)
<b>Time of first Breastfeeding after childbirth (n = 769)</b>	
- Within an hour after delivery	426 (55.4%)
- Between 1 hour and 6 hours after delivery	225 (29.3%)
- Between 7 hours and 24 hours after delivery	53 (6.9%)
- One day or more after delivery	58 (7.5%)
- Never	7 (0.9%)
<b>Other liquids given to babies during the first week after childbirth (n =710)</b>	
- Boiled water	72 (10.1%)
- Honey	7 (1.0%)
- Sugar water	49 (6.9%)
- Breast milk	212 (29.9%)
- Nothing	370 (52.1%)
<b>Age of the infant for the respondents who had a baby during the survey (n =199)</b>	
- 06 months	76 (38.2%)
- 12 months	67 (33.7%)
- 16 months	38 (19.1%)
- 24 months	18 (9%)
<b>Mother continuing breastfeeding to date (n = 772)</b>	
- Yes	586 (75.9%)
- No	186 (24.1%)

Table 7 Feeding practices

Variables	Frequency (%) / Mean (SD)
<b>Difficulties understanding any of the feeding options chosen (n= 727)</b>	
- Yes	34 (4.7%)
- No	693 (95.3%)
<b>If yes, difficulties understanding the following feeding options (n = 34)</b>	
- Exclusive breastfeeding until six months	0
- Feeding with artificial milk	7 (20.6%)
- Feeding with cow milk	9 (26.5%)
- Heated breast milk	10 (29.4%)
- Feeding with breast milk from a milk bank	8 (23.5%)
- Breastfeeding by a nurse	5 (15.7%)
<b>Mother's opinion on age when breastfeeding should cease (weaning should occur)</b>	18 months (4.9)
<b>Mother's opinion of when weaning should begin (n = 478)</b>	
- Baby starts talking	32 (6.7%)
- Baby starts walking	46 (9.6%)
- Baby no longer likes to be breastfed	76 (15.9%)
- Mother become pregnant again	155 (32.4%)
- Baby grows his first teeth	14 (2.9%)
- Baby wants to eat with family	14 (2.9%)
- Baby does not often breastfeed	42 (8.8%)
- Other reasons:	
- Baby eats too much	32 (6.7%)
- Baby starts eating by himself	7 (1.5%)
- The mom choose to stop	6 (1.3%)
- Baby starts losing weight	5 (1.0%)
- Baby does not want to eat porridge	8 (1.7%)
- Death of the parent	2 (0.4%)
- Milk becomes less nutritious	5 (1%)
- When the breast becomes painful	2 (0.4%)
- When the baby has between 18 to 24 months	13 (2.7%)
- No opinion reported	19 (4%)
<b>Reasons why exclusive breastfeeding was difficult to apply (n = 18)</b>	
- The milk is expensive	4 (22.2%)
- Mom felt that the baby was not full	10 (55.6%)
<b>Reasons why feeding with artificial milk was difficult to apply (n = 38)</b>	
- The milk is expensive	21 (55.3%)
- This option was not acceptable by the partner	4 (10.5%)
- There was a problem of storage	3 (7.9%)
<b>Reasons why feeding with cow milk was difficult to apply (n = 16)</b>	
- The milk is expensive	11 (68.8%)
- This option was not acceptable by the partner	4 (25%)
- There was a problem of storage	2 (12.5%)
<b>Reasons why feeding with heated breast milk was difficult to apply (n = 23)</b>	
- The mom is working	4 (17.4%)
- The milk is expensive	2 (8.7%)
- Mom felt that the baby was not full	1 (4.3%)
- This option was not acceptable by the partner	9 (39.1%)
- There was a problem of conservation	7 (30.4%)

<b>Reasons why feeding with milk from the milk bank was difficult to apply (n = 11)</b>	
- The milk is expensive	5 (45.5%)
- Mom felt that the baby was not full	1 (9.1%)
- This option was not acceptable by the partner	3 (27.3%)
- There was a problem of conservation	4 (36.4%)
<b>Reasons why feeding a baby with a wet nurse was difficult to apply (n = 15)</b>	
- The milk is expensive	1 (6.7%)
- This option was not acceptable by the partner	14 (93.3%)
<b>Reasons for giving breast milk to the baby in the past 12 hours (n = 584)</b>	
- This is the only food I could have	86 (14.7%)
- This is what he likes to eat	46 (7.9%)
- He was hungry	102 (15.5%)
- It is nutritious	300 (51.4%)
- It tastes good	2 (0.3%)
- I wanted to do it	28 (3.6%)
- Other:	
- Baby was constipated	4 (0.7%)
- Baby was crying	3 (0.5%)
- No reasons reported	6 (1.0%)
<b>Reasons for giving water to the baby in the past 12 hours (n = 592)</b>	
- This is the only food I could have	67 (11.3%)
- This is what he likes to eat	30 (5.1%)
- He was hungry	26 (4.4%)
- It is nutritious	14 (2.4%)
- It tastes good	6 (1.0%)
- I wanted to do it	50 (8.4%)
- He was constipated	1 (0.2%)
- No reasons reported	398 (51.4%)
<b>Reasons for giving juice to the baby in the past 12 hours (n = 65)</b>	
- This is the only food I could have	7 (10.8%)
- This is what he likes to eat	9 (13.8%)
- He was hungry	9 (13.8%)
- It is nutritious	2 (3.0%)
- It tastes good	9 (13.8%)
- I wanted to do it	9 (13.8%)
- He was constipated	18 (27.7%)
- No reasons reported	2 (3.0%)
<b>Reasons for giving cow milk to the baby in the past 12 hours (n = 52)</b>	
- This is the only food I could have	7 (13.5%)
- This is what he likes to eat	7 (13.5%)
- He was hungry	18 (34.6%)
- It is nutritious	7 (13.5%)
- It tastes good	5 (9.6%)
- I wanted to do it	6 (11.5%)
- No reasons reported	2 (0.3%)

<b>Reasons for giving soy milk to the baby in the past 12 hours (n = 66)</b>	
- This is the only food I could have	4 (6%)
- This is what he likes to eat	12 (18.1%)
- He was hungry	18 (27.3%)
- It is nutritious	29 (43.9%)
- It tastes good	1 (1.5%)
- I wanted to do it	2 (3%)
<b>Reasons for giving soup to the baby in the past 12 hours (n = 61)</b>	
- This is the only food I could have	7 (11.5%)
- This is what he likes to eat	11 (18%)
- He was hungry	16 (26.2%)
- It is nutritious	7 (11.5%)
- It tastes good	8 (13.1%)
- I wanted to do it	11 (18)
- No reasons reported	1 (1.6%)
<b>Reasons for giving tea to the baby in the past 12 hours (n = 386)</b>	
- This is the only food I could have	68 (17.6%)
- This is what he likes to eat	55 (14.2%)
- He was hungry	149 (38.6%)
- It is nutritious	7 (1.8%)
- It tastes good	8 (2.1%)
- I wanted to do it	61 (15.8%)
- He was constipated	20 (5.2%)
- No reasons reported	18 (4.7%)
<b>Reasons for giving yogourt to the baby in the past 12 hours (n = 31)</b>	
- This is the only food I could have	4 (12.9%)
- This is what he likes to eat	8 (25.8%)
- He was hungry	3 (9.7%)
- It is nutritious	7 (22.6%)
- It tastes good	5 (1.16%)
- I wanted to do it	3 (9.7%)
- No reasons reported	1 (3.2%)
<b>Reasons for giving honey to the baby in the past 12 hours (n = 3)</b>	
- It is nutritious	1 (33.3%)
- It tastes good	1 (33.3%)
- No reasons reported	1 (33.3%)
<b>Reasons for giving other types of foods to the baby in the past 12 hours (n = 8)</b>	
- This is the only food I could have	2 (25.0%)
- This is what he likes to eat	2 (25.0%)
- He was hungry	1 (12.5%)
- I wanted to do it	1 (12.5%)
- No reasons reported	2 (25.0%)
<b>Utensil used to give breast milk to the baby in the past 12 hours (n = 541)</b>	
- Spoon	6 (1.1%)
- Bottle	22 (4.0%)
- Plate	4 (0.7%)
- Nothing (breastfeed)	502 (92.8%)
- Straw	4 (0.7%)
- Cup	3 (0.6%)

<b>Utensil used to give water to the baby in the past 12 hours (n = 577)</b>	
- Spoon	53 (9.2%)
- Bottle	63 (10.9%)
- Plate	1 (0.2%)
- Nothing (breastfeed)	1 (0.2%)
- No reasons reported	459 (79.5%)
<b>Utensil used to give juice to the baby in the past 12 hours (n = 65)</b>	
- Spoon	13 (20.0%)
- Bottle	13 (20.0%)
- No reasons reported	39 (60.0%)
<b>Utensil used to give cow milk to the baby in the past 12 hours (n = 52)</b>	
- Spoon	6 (11.5%)
- Bottle	22 (42.3%)
- No reasons reported	24 (46.2%)
<b>Utensil used to give soy milk to the baby in the past 12 hours (n = 58)</b>	
- Spoon	12 (20.6%)
- Bottle	4 (6.9%)
- Plate	11 (18.9%)
- Nothing (breastfeed)	1 (1.7%)
- No reasons reported	30 (51.7%)
<b>Utensil used to give soup to the baby in the past 12 hours (n = 55)</b>	
- Spoon	29 (52.7%)
- Plate	24 (43.7%)
- No reasons reported	2 (3.6%)
<b>Utensil used to give tea to the baby in the past 12 hours (n = 363)</b>	
- Spoon	54 (14.9%)
- Bottle	27 (7.4%)
- Plate	3 (0.9%)
- Nothing (breastfeed)	1 (0.3%)
- No reasons reported	278 (76.6%)
<b>Utensil used to give yogurt to the baby in the past 12 hours (n = 30)</b>	
- Spoon	5 (16.7%)
- Bottle	2 (6.7%)
- Nothing (breastfeed)	1 (3.3%)
- No reasons reported	22 (73.3%)
<b>Utensil used to give honey to the baby in the past 12 hours (n = 4)</b>	
- Spoon	4 (0.5%)
<b>Reasons for giving fufu to the baby in the past 12 hours (n = 360)</b>	
- This is the only food I could have	82 (22.8%)
- This is what he likes to eat	46 (12.8%)
- He was hungry	209 (58.1%)
- It is nutritious	10 (2.8%)
- It tastes good	1 (0.3%)
- I wanted to do it	11 (3.1%)
- No reasons reported	1 (0.3%)

**Reasons for giving soy porridge to the baby in the past 12 hours (n = 84)**

- This is the only food I could have	18 (21.4%)
- This is what he likes to eat	7 (8.3%)
- He was hungry	29 (34.5%)
- It is nutritious	23 (27.4%)
- It tastes good	1 (1.2%)
- No reasons reported	1(1.2%)

**Reasons for giving imported porridge to the baby in the past 12 hours (n = 98)**

- This is the only food I could have	11 (11.2%)
- This is what he likes to eat	17 (17.3%)
- He was hungry	48 (49%)
- It is nutritious	13 (13.3%)
- It tastes good	6 (6.1%)
- I wanted to do it	3 (3.1%)
- He was crying	2 (2.0%)

**Reasons for giving maize porridge to the baby in the past 12 hours (n = 90)**

- This is the only food I could have	21 (23.3%)
- This is what he likes to eat	6 (6.7%)
- He was hungry	51 (56.7%)
- It is nutritious	7 (7.8%)
- It tastes good	1 (1.1%)
- I wanted to do it	3 (3.3%)

**Reasons for giving meat to the baby in the past 12 hours (n = 60)**

- This is the only food I could have	9 (15.0%)
- This is what he likes to eat	13 (21.7%)
- He was hungry	21 (35.0%)
- It is nutritious	9 (15.0%)
- It tastes good	2 (3.3%)
- I wanted to do it	2 (3.3%)

**Reasons for giving fish to the baby in the past 12 hours (n = 221)**

- This is the only food I could have	40 (18.1%)
- This is what he likes to eat	38 (17.2%)
- He was hungry	81 (36.7%)
- It is nutritious	30 (13.6%)
- It tastes good	14 (6.3%)
- I wanted to do it	14 (6.3%)

**Reasons for giving rice to the baby in the past 12 hours (n = 128)**

- This is the only food I could have	27 (21.1%)
- This is what he likes to eat	34 (26.6%)
- He was hungry	51 (39.8%)
- It is nutritious	2 (1.6%)
- It tastes good	1 (0.8%)
- I wanted to do it	11 (8.6%)

<b>Reasons for giving cereals to the baby in the past 12 hours (n = 72)</b>	
- This is the only food I could have	7 (9.7%)
- This is what he likes to eat	11 (15.3%)
- He was hungry	29 (40.3%)
- It is nutritious	18 (25.0%)
- It tastes good	3 (4.2%)
- I wanted to do it	4 (5.6%)
<b>Reasons for giving other types of food to the baby in the past 12 hours (n = 92)</b>	
- This is the only food I could have	20 (21.7%)
- This is what he likes to eat	17 (18.5%)
- He was hungry	55 (59.8%)
- I wanted to do it	6 (6.5%)
- No reasons reported	6 (6.5%)
<b>Utensil used to give fufu to the baby in the past 12 hours (n = 360)</b>	
- Spoon	6 (1.7%)
- Plate	168 (46.7%)
- Hands	166 (46.1%)
- No reasons reported	4 (1.1%)
<b>Utensil used to give soy porridge to the baby in the past 12 hours (n =84)</b>	
- Spoon	42 (50.0%)
- Plate	32 (38.1%)
- Hands	2 (2.4%)
<b>Utensil used to give imported porridge to the baby in the past 12 hours (n = 98)</b>	
- Spoon	34 (34.7%)
- Plate	44 (44.9%)
- Hands	1 (1%)
<b>Utensil used to give maize porridge to the baby in the past 12 hours (n = 90)</b>	
- Spoon	37 (41.1%)
- Plate	39 (43.3%)
- Hands	4 (4.4%)
<b>Utensil used to give meat to the baby in the past 12 hours (n = 60)</b>	
- Spoon	4 (6.7%)
- Plate	35 (58.3%)
- Hands	17 (28.3%)
<b>Utensil used to give fish to the baby in the past 12 hours (n = 221)</b>	
- Spoon	5 (2.7%)
- Plate	109 (49.3%)
- Hands	90 (40.7%)
<b>Utensil used to give rice to the baby in the past 12 hours (n = 128)</b>	
	N= 128
- Spoon	44 (34.4%)
- Plate	59 (46.1%)
- Hands	7 (5.5%)
- Other (precise)	1 (0.8%)
<b>Utensil used to give cereals to the baby in the past 12 hours (n = 72)</b>	
- Spoon	16 (22.2%)
- Plate	40 (55.6%)
- Hands	11 (15.3%)

<b>Utensil used to give other types of foods to the baby in the past 12 hours (n = 92)</b>	
- Spoon	13 (14.1%)
- Plate	39 (42.4%)
- Hands	45 (48.9%)
- No reasons reported	4 (4.3%)
<b>Exclusive breastfeeding until six months (n = 774)</b>	
- Yes	59 (7.6%)
- No	715 (92.4%)
<b>Proxy for Exclusive breastfeeding</b>	
- Women who exclusively breastfeed	187 (25.1%)
- Women who did not exclusively breastfed	560 (74.9%)

## R CODES

```
library(haven)
DRCSurvey2017Cleaned_FINAL <- read_dta("C:/Users/drjkk/Dropbox/JJK LRV KDC
Analysis/DRCSurvey2017Cleaned_FINAL.dta")
Thesis <-DRCSurvey2017Cleaned_FINAL
#####Age of Mother: Question 1 #####
attach(Thesis)
Age_mother <- as.numeric(Thesis$age_new)
mean(Age_mother)
summary(Age_mother)
sd(Age_mother)
quantile(Age_mother)
table(Age_mother)
error <- qnorm(0.975) * 6.129761/sqrt(774)
ci <- 1.06*error
mean(Age_mother) - error*1.96
mean(Age_mother) + error*1.96

conf.level <- 0.95
z <- qt((1+conf.level)/2, df = n-1)
Age_mother[Age_mother==18|Age_mother==19|Age_mother==20|Age_mother==21|Age_mother==22|
Age_mother==23|Age_mother==24]<-1
Age_mother[Age_mother==25|Age_mother==26|Age_mother==27|Age_mother==28|Age_mother==29|
Age_mother==30|Age_mother==31|Age_mother==32]<-2
Age_mother[Age_mother>=33]<-3
table(Age_mother)
##### Commune the mother lives: Question 2 #####
Commune_lived <- as.numeric(commne_new)
Summary(Commune_lived)
table(Commune_lived)
table(Commune_lived)/764
##### Marital Status: Question 3 #####
Marital_status <- as.numeric(qu3_new)
summary(Marital_status)
table(Marital_status)
table(Marital_status)/773
##### Level of Literacy: Question 4 #####
Literacy <-as.numeric(qu4_new)
summary(Literacy)
table(Literacy)
table(Literacy)/774

##### Occupation: Question 5 #####
Occupation <-as.numeric(q5_new)
summary(Occupation)
table(Occupation)
table(Occupation)/772
table(Thesis$Q5Autrespciser_new)
as.character(Q5Autrespciser_new)
table(Q5Autrespciser_new)
```

```

summary(Q5Autrespcriscer_new)
Occupation[Occupation==1|Occupation==8|Occupation==9]<-1
Occupation[Occupation==2|Occupation==3|Occupation==4|Occupation==5|Occupation==6|Occupation=
=7]<-2
table(Occupation)
##### Age of the partner: Question 6 #####
as.numeric(q6_new)
mean(Age_partner, na.rm = TRUE)
summary(Age_partner)
sd(Age_partner, na.rm=T)
quantile(Age_partner)
table(Age_partner)
table(Age_partner)/767
qnorm(0.975) * 6.997666/sqrt(767)
error <- qnorm(0.975) * 6.997666/sqrt(767)
ci <- 1.06*error
35.03651 - (0.4952262*1.96)
35.03651 + (0.4952262*1.96)
mean(Age_partner, na.rm = TRUE) - 0.4952262*1.96
mean(Age_partner, na.rm = TRUE) + 0.4952262*1.96
#####Education level of the partner: Question 7 #####
Partner_education <- as.numeric(q7_new)
summary(Partner_education)
table(Partner_education)
table(Partner_education)/760
##### Partner Occupation: Question 8 #####
Partner_occupation <- as.numeric(q8_new)
summary(Partner_occupation)
table(Partner_occupation)
table(Partner_occupation)/769
#####Who is the Owner of the house: Question 9 #####
Ownership <-as.numeric(q9_new)
summary(Ownership)
table(Ownership)
table(Ownership)/771
##### Relationship with Owner: Question 10 #####
Relation_owner <-as.numeric(q10_new)
summary(Relation_owner)
table(Relation_owner)
table(Relation_owner)/772
as.character(Q5Autrespcriscer111_new)
table(Q5Autrespcriscer111_new)
summary(Q5Autrespcriscer111_new)
##### Number of people in the household: Question 11 #####
Household_num <-as.numeric(q11_new)
summary(Household_num)
table(Household_num)
table(Household_num)/774
mean(Household_num)
sd(Household_num)
##### Main Source of Water supply: Question 12 #####

```

```

Water_source <-as.numeric(q12_new)
summary (Water_source)
table(Water_source)
table(Water_source)/762
mean(Water_source, na.rm = TRUE)

Water_source[Water_source==2|Water_source==1]<-1
Water_source[Water_source==3]<-0
Water_source[Water_source>=4]<-(-1)
table(Water_source)
sum(Water_source, na.rm=T)

Q12Autres_new
table(Q12Autres_new)
##### Main Source of light: Question 13 #####
Light_source <- as.numeric(q131_new)
summary(Light_source)
table (Light_source)
table (Light_source)/763
mean(Light_source, na.rm = TRUE)
summary(Thesis$q13autres_new)
table(Thesis$q13autres_new)

Light_source[Light_source==2|Light_source==1]<-1
Light_source[Light_source==3]<-0
Light_source[Light_source>=4]<-(-1)
table(Light_source)

##### Source to prepare food: Question 14 #####
Food_source <- as.numeric(q14_new)
summary(Food_source)
table(Food_source)
table(Food_source)/769
mean(Food_source, na.rm = TRUE)
table(Thesis$q14autre)
summary(q14autre)
table(q14autre)

Food_source[Food_source==1]<-1
Food_source[Food_source==2]<-0
Food_source[Food_source>=3]<-(-1)
table(Food_source)
##### furniture of the household: Question 15 #####
# if e.g., box 1 is luxury
# to replace 1's with 2's
Thesis$Q15box1_new[Thesis$Q15box1_new==1]<-2
as.numeric(q15box1_new)
##Parcelle
table(as.numeric(q15box1_new))
Parcelle <-as.numeric(q15box1_new)
table(Parcelle)

```

```

table(Parcette==1)
Parcette[Parcette==1]<-1
Parcette[Parcette==0]<-0
table(Parcette)
### Frigo
Frigo <-as.numeric(Q15box2_new)
Frigo[Frigo==1]<-1
Frigo[Frigo==0]<-0
table(Frigo)
###Tele
Tele<- as.numeric(Q15box3_new)
Tele[Tele==1]<-1
Tele[Tele==0]<-0
table(Tele)
###DVD
DVD <-as.numeric(Q15box4_new)
DVD[DVD==1]<-1
DVD[DVD==0]<-0
table(DVD)
### Celphone
Celphone <-as.numeric(Q15box5_new)
Celphone[Celphone==1]<-1
Celphone[Celphone==0]<-0
table(Celphone)
###Vehicle
Vehicle <- Q15box6_new
Vehicle[Vehicle==1]<-1
Vehicle[Vehicle==0]<-0
table(Vehicle)
###Computer
Computer <-Q15box7_new
Computer[Computer==1]<-1
Computer[Computer==0]<-0
table(Computer)
### Bike
Bike <-Q15box8_new
Bike[Bike==1]<-1
Bike[Bike==0]<-0
table(Bike)
### Moto
Moto <-as.numeric(Q15box9_new)
Moto[Moto==1]<-1
Moto[Moto==0]<-0
table(Moto)
###Meubles
Meubles<-Q15box11_new
Meubles[Meubles==1]<-1
Meubles[Meubles==0]<-0
table(Meubles)
##### Toilet used in the household: Question 16 #####
Toilet_used <- as.numeric(q16_new)

```

```

summary(Toilet_used)
table(Toilet_used)
table(Toilet_used)/772
table(q16autres_new)
Toilet_used[Toilet_used==1]<-1
Toilet_used[Toilet_used==3|Toilet_used==2]<-0
Toilet_used[Toilet_used>=4]<-(-1)
table(Toilet_used)
#####SES for Living Style #####
SES_index <-
Water_source+Light_source+Food_source+Toilet_used+Parcelle+Frigo+Tele+DVD+Celphone+Vehicle
+Computer+Bike+Moto+Meubles
SES_final <-as.numeric(SES_index)
table(SES_final)
mean(SES_final, na.rm = T)
median(SES_final, na.rm = T)
#####number of Live Birth: Question 17 #####
Live_birth <- as.numeric(q17_new)
mean(Live_birth)
summary(Live_birth)
sd(Live_birth)
quantile(Live_birth)
table(Live_birth)
table(Live_birth)/774
##### Antenatale Care: Question 18 #####
Ante_care <- as.numeric(q18_new)
summary(Ante_care)
mean(Ante_care, na.rm = TRUE)
table(Ante_care)
table(Ante_care)/772
##### Delivery place: Question 19 #####
Delivery <- as.numeric(q19_new)
Summary(Delivery)
mean(Delivery, na.rm = TRUE)
table(Delivery)
table(Delivery)/770
##### Birth way: Question 20 #####
Birth_way <- as.numeric(q20_new)
Birth_way
summary(Birth_way)
mean(Birth_way, na.rm = TRUE)
table(Birth_way)
table(Birth_way)/765
##### Date of birth: Question 21 #####
Date_birth <- as.numeric(q21_new)
Summary(Date_birth)
table(Date_birth)
table(Date_birth)/774
##### Time of firts breastfeeding: Question 22 #####
Breastfeeding_time <- as.numeric(q22_new)
summary(Breastfeeding_time)

```

```

table(Breastfeeding_time)
table(Breastfeeding_time)/769
##### Drink given to baby for the first 12 h: Question 23 #####
table(Thesis$Q23box1_new)
table(Thesis$Q23box2_new)
table(Thesis$Q23box3_new)
table(Thesis$Q23box4_new)
table(Thesis$Q23box5_new)
table(Thesis$Q23box6_new)
##### Age of the baby: Question 24 #####
Age_baby <- as.numeric(q24_new)
summary(Age_baby)
quantile(Age_baby, na.rm = TRUE)
mean(Age_baby, na.rm = TRUE)
sd(Age_baby, na.rm = TRUE)
qnorm(0.975) * 4.907996/sqrt(774)
error <- qnorm(0.975) * 4.907996/sqrt(774)
ci <- 1.06*error
12.55995 - (0.3457656*1.96)
12.55995 + (0.3457656*1.96)
mean(Age_baby, na.rm = TRUE) - 0.3457656*1.96
mean(Age_baby, na.rm = TRUE) + 0.3457656*1.96
table(Age_baby)
hist(Age_baby, na.rm = TRUE)
hist(Age_baby, freq = F)
hist(Age_baby, prob=T, ylim=c(0, 0.1), breaks=seq(from=0, to=26, by=2),
      main="Distribution of Age of the baby at the time of survey",xlab="Age of the baby (Months)", las=1)
lines(density(Age_baby, na.rm=T), col=2, lwd=3)
##### Feeding status: Question 25 #####
Feeding <- as.numeric(q25_new)
summary(Feeding)
mean(Feeding, na.rm = TRUE)
table(Feeding)
table(Feeding)/774
##### Feeding options taught during antenatal care: Question 26 #####
table(Thesis$check261_new==0)
table(Thesis$check262_new==0)
table(Thesis$check263_new==0)
table(Thesis$check264_new==0)
table(Thesis$check265_new==0)
table(Thesis$check267_new==0)
summary(Thesis$check261_new==1)
table(q27_new)
##### Difficulties understanding feeding options: Question 27 #####
Understanding_feeding <- as.numeric(q27_new)
table(Understanding_feeding)
summary(Understanding_feeding)
table(Understanding_feeding)/774

#####conditional data: Questions 28-31 #####
## ##### Breastfeeding challenges: Question 28 #####

```

```

summary(q271_new)
table(q271_new==1)
table(q2711_new==1)
table(q2712_new==1)
table(q27121_new==1)
table(q27122_new==1)
table(q27123_new==1)
table(q271_new)/34
table(q2711_new)/34
table(q2712_new)/34
table(q27121_new)/34
table(q27122_new)/34
table(q27123_new)/34
##### challenges applying feeding: Question 29 #####
table(Q291_new==1)
table(Q291_new)/34
table(q292_new==1)
table(q292_new)/34
table(Q293_new==1)
table(Q293_new)/34
table(Q294_new==1)
table(Q294_new)/34
table(Q295_new==1)
table(Q295_new)/34
table(q296_new==1)
table(q296_new)/34
##### Feeding option difficult to apply: Question 30 #####
table(q301_new)
table(q302_new)
table(q303_new)
table(q304_new)
table(q305_new)
table(q306_new)
##### Feeding option choosen: Question 31 #####33#####33
table(Q31Box1_new)
table(Q31Box1_new==1)
table(Q31box2_new)
table(Q31box2_new==1)
table(Q31box3_new)
table(Q31box4_new)
table(Q31box5_new)
table(Q31box6_new)
table(Q31Box1_new)/774*100
table(Q31box2_new)/774*100
table(Q31box3_new)/774*100
table(Q31box4_new)/774*100
table(Q31box5_new)/774*100
table(Q31box6_new)/774*100
##### Feeding with breastmilk: Question 32 #####
table(Q32box1_new)
table(Q32box1_new==1)

```

table(Q32box2\_new)  
 table(Q32box3\_new)  
 table(Q32Box4\_new)  
 table(Q32box1\_new)/774\*100  
 table(Q32box2\_new)/774\*100  
 table(Q32box3\_new)/774\*100  
 table(Q32Box4\_new)/774\*100  
 ##### Feeding with Artificial milk #####  
 ##### Reasons for giving artificial milk: Question 33 #####  
 table(Q33box1\_new)/774\*100  
 table(Q33box2\_new)/774\*100  
 table(Q33box3\_new)/774\*100  
 table(Q33box4\_new)/774\*100  
 table(Q33box5\_new)/774\*100  
 ##### Reasons for not giving artificial milk: Question 34 #####  
 table(Q34box1\_new)/774\*100  
 table(Q34box2\_new)/774\*100  
 table(Q34box3\_new)/774\*100  
 table(Q34box4\_new)/774\*100  
 table(Q34box5\_new)/774\*100  
 ##### Drinks given to the baby within the last twelve hours: Question 35 #####  
 table(Q35\_1\_new)  
 table(Q35\_2\_new)  
 table(Q35\_3\_new)  
 table(Q35\_4\_new)  
 table(Q35\_5\_new)  
 table(Q35\_6\_new)  
 table(Q35\_7\_new)  
 table(Q35\_8\_new)  
 table(Q35\_9\_new)  
 table(Q35\_10\_new)  
 ##### Reasons for giving other foods: Question 36 #####  
 table(Q36\_1\_new)  
 table(Q36\_2\_new)  
 table(Q36\_3\_new)  
 table(Q36\_4\_new)  
 table(Q36\_5\_new)  
 table(Q36\_6\_new)  
 table(Q36\_7\_new)  
 table(Q36\_8\_new)  
 table(Q36\_9\_new)  
 table(Q36\_10\_new)  
 ##### Utensils used for feeding: Question 37 #####3  
 table(Q37\_1\_new)  
 table(Q37\_2\_new)  
 table(Q37\_3\_new)  
 table(Q37\_4\_new)  
 table(Q37\_5\_new)  
 table(Q37\_6\_new)  
 table(Q37\_7\_new)  
 table(Q37\_8\_new)

```

table(Q37_9_new)
table(Q37_10_new)
table(q37autre)
#####w many time time di the child consume this: Question 38 #####
###Breastmilk###
table(as.numeric(Q38_1_new))
mean(Q38_1_new, na.rm=T)
sd(Q38_1_new, na.rm=T)
qnorm(0.975) * 2.040425/sqrt(774)
error <- qnorm(0.975) * 2.040425/sqrt(774)
ci <- 1.06*error
mean(Q38_1_new, na.rm = TRUE) - 0.1437468*1.96
mean(Q38_1_new, na.rm = TRUE) + 0.1437468*1.96
quantile(Q38_1_new, na.rm=T)
###Water###
table(as.numeric(Q38_2_new))
mean(Q38_2_new, na.rm=T)
quantile(Q38_2_new, na.rm=T)
sd(Q38_2_new, na.rm=T)
qnorm(0.975) * 2.040425/sqrt(774)
error <- qnorm(0.975) * 2.040425/sqrt(774)
ci <- 1.06*error
mean(Q38_1_new, na.rm = TRUE) - 0.4929817*1.96
mean(Q38_1_new, na.rm = TRUE) + 0.4929817*1.96
###Juice##
table(as.numeric(Q38_3_new))
mean(Q38_3_new, na.rm=T)
quantile(Q38_3_new, na.rm=T)
###Cow milk##
table(as.numeric(Q38_4_new))
mean(Q38_4_new, na.rm=T)
quantile(Q38_4_new, na.rm=T)
###Soy milk##
table(as.numeric(Q38_5_new))
mean(Q38_5_new, na.rm=T)
quantile(Q38_5_new, na.rm=T)
###Soup milk##
table(as.numeric(Q38_6_new))
mean(Q38_6_new, na.rm=T)
quantile(Q38_6_new, na.rm=T)
###Tea##
table(as.numeric(Q38_7_new))
mean(Q38_7_new, na.rm=T)
quantile(Q38_7_new, na.rm=T)
###Yogourt##
table(as.numeric(Q38_8_new))
mean(Q38_8_new, na.rm=T)
quantile(Q38_8_new, na.rm=T)
###Honey##
table(as.numeric(Q38_9_new))
mean(Q38_9_new, na.rm=T)

```

```

quantile(Q38_9_new, na.rm=T)
###Other###
table(as.numeric(Q38_10_new))
mean(Q38_10_new, na.rm=T)
quantile(Q38_10_new, na.rm=T)
##### Age of introduction of other foods: Question 39 #####
##Milk##
table(Q39_1_new)
table(Q39_2_new)
table(Q39_3_new)
table(Q39_4_new)
table(Q39_5_new)
table(Q39_6_new)
table(Q39_7_new)
table(Q39_8_new)
table(Q39_9_new)
table(Q39_10_new)
##### Hard food consumed during the last 12 hours: Question 40 #####
table(Q40_1_new==1)
table(Q40_2_new==1)
table(Q40_3_new==1)
table(Q40_4_new==1)
table(Q40_5_new==1)
table(Q40_6_new==1)
table(Q40_7_new==1)
table(Q40_8_new==1)
table(Q40_9_new==1)
#####3 Reasons for giving hard food: Question 41 #####
table(Q41_1_new)
table(Q41_2_new)
table(Q41_3_new)
table(Q41_4_new)
table(Q41_5_new)
table(Q41_6_new)
table(Q41_7_new)
table(Q41_8_new)
table(Q41_9_new)
table(Q41_10_new)
table(q41autre_new)
##### Utensile used for feeding: question 42 #####
table(Q42_1_new)
table(Q42_2_new)
table(Q42_3_new)
table(Q42_4_new)
table(Q42_5_new)
table(Q42_6_new)
table(Q42_7_new)
table(Q42_8_new)
table(Q42_9_new)
summary(Q42_1_new)
##### How many times the child consum food for the last 12 hours: Question 43 #####

```

```

table(as.numeric(Q43_1_new))
table(as.numeric(Q43_2_new))
table(as.numeric(Q43_3_new))
table(as.numeric(Q43_4_new))
table(as.numeric(Q43_5_new))
table(as.numeric(Q43_5_new))
table(as.numeric(Q43_6_new))
table(as.numeric(Q43_7_new))
table(as.numeric(Q43_8_new))
table(as.numeric(Q43_9_new))
##### Age for starting solid food: Question 44 #####
table(as.numeric(Q44_1_new))
table(as.numeric(Q44_2_new))
table(as.numeric(Q44_3_new))
table(as.numeric(Q44_4_new))
table(as.numeric(Q44_5_new))
table(as.numeric(Q44_6_new))
table(as.numeric(Q44_7_new))
table(as.numeric(Q44_8_new))
table(as.numeric(Q44_9_new))
##### Weaning Age: Question 45 #####
as.numeric(Q45_new)
table(Q45_new)
mean(Q45_new, na.rm=T)
sd(Q45_new, na.rm=T)
qnorm(0.975) * 4.987433/sqrt(774)
error <- qnorm(0.975) * 4.987433/sqrt(774)
mean(Q45_new, na.rm=T)-0.3513619*1.96
mean(Q45_new, na.rm=T)+0.3513619*1.96
##### How to know if the baby is ready for weaning: Question 46 #####
table(q46_1_new)
table(q46_2_new)
table(q46_3_new)
table(q46_4_new)
table(q46_5_new)
table(q46_6_new)
table(q46_7_new)
table(q46autre_new)
summary(q46autre_new)
##### What food to give the baby when he stops breastmilk: Question 47 #####
table(Q47_1_new)
table(Q47_2_new)
table(Q47_3_new)
table(Q47_4_new)
table(Q47_5_new)
table(Q47_6_new)
table(Q47_7_new)
table(Q47_8_new)
table(Q47_9_new)
table(q47qutre)
#####Weaning Age#####

```

```

Weaning_age <- as.numeric(Q45_new)
Weaning_age
table(Weaning_age)
Weaning_age[Weaning_age==1|Weaning_age==2|Weaning_age==4|Weaning_age==6]<-1
Weaning_age[Weaning_age>6]<-0
table(Weaning_age)

table(SES_final)
SES_final[SES_final==(-3)|SES_final==(-2)|SES_final==(-1)|SES_final==0|SES_final==2|SES_final==3]<-(-1)
SES_final[SES_final==4]<-0
SES_final[SES_final>4]<-1
table(SES_final)
##### Exclusive Breastfeeding until Six months #####
Breastfeeding_6months <- Q31Box1_new
Breastfeeding_6months
table(Breastfeeding_6months)
table(Breastfeeding_6months)
##### Exclusive feeding Q 39 and Q 44 #####3
table(Q39_1_new)
feed1<-Q39_1_new
feed1<- as.numeric(feed1)
feed1[feed1<6]<-0
feed1[feed1>=6]<-1
table(feed1)
feed2<- as.numeric(Q39_2_new)
feed2[feed2<6]<-0
feed2[feed2>=6]<-1
table(feed2)
table(Q39_2_new)
summary(Q39_2_new)
feed3<- as.numeric(Q39_3_new)
feed3[feed3<6]<-0
feed3[feed3>=6]<-1
table(feed3)
feed4<- as.numeric(Q39_4_new)
feed4[feed4<6]<-0
feed4[feed4>=6]<-1
table(feed4)
feed5<- as.numeric(Q39_5_new)
feed5[feed5<6]<-0
feed5[feed5>=6]<-1
table(feed5)
feed6<- as.numeric(Q39_6_new)
feed6[feed6<6]<-0
feed6[feed6>=6]<-1
table(feed6)
feed7<- as.numeric(Q39_7_new)
feed7[feed7<6]<-0
feed7[feed7>=6]<-1
table(feed7)

```

```

feed8<- as.numeric(Q39_8_new)
feed8[feed8<6]<-0
feed8[feed8>=6]<-1
table(feed8)
feed9<- as.numeric(Q39_9_new)
feed9[feed9<6]<-0
feed9[feed9>=6]<-1
table(feed9)
feed10<- as.numeric(Q39_10_new)
feed10[feed10<6]<-0
feed10[feed10>=6]<-1
table(feed10)
as.numeric(Q39_2_new)
summary(Q39_2_new)
as.numeric(Q35_2_new)
summary(Q35_2_new)
table(Q35_2_new)
table(Q35_1_new)
table(Q39_1_new)
table(feed1)
# create a variable for each liquid if the value of the ew variable is 0, means mother gave this food before
six months
##Water
Liquid_feed <- feed2|feed3|feed4|feed5|feed6|feed7|feed8|feed9|feed10
as.numeric(Liquid_feed)
table(Liquid_feed)
table(Liquid_feed)/774
Liquid_feed <-
(feed2==0|feed3==0|feed4==0|feed5==0|feed6==0|feed7==0|feed8==0|feed9==0|feed10==0)
table(Liquid_feed)
EBF0n1y <- rep(NA, length(feed2))
EBF0n1y[is.na(EBF0n1y)&feed1==1]=1
table(EBF0n1y)
EBFon1y2 <- rep(NA, length(feed2))
EBFon1y2[is.na(EBFon1y2)&feed1==0]=1
table(EBFon1y2)
table(feed1)
TotalEBF <- rep(NA, length(Liquid_feed))
TotalEBF[is.na(TotalEBF)&feed1==1]=1
table(TotalEBF)
#####solid food
Solid_feed1<- as.numeric(Q44_1_new)
Solid_feed1
Solid_feed1[Solid_feed1<6]<-0
Solid_feed1[Solid_feed1>=6]<-1
table(Solid_feed1)
Solid_feed2<- as.numeric(Q44_2_new)
Solid_feed2
Solid_feed2[Solid_feed2<6]<-0
Solid_feed2[Solid_feed2>=6]<-1
table(Solid_feed2)

```

```

Solid_feed3<- as.numeric(Q44_3_new)
Solid_feed3
Solid_feed3[Solid_feed3<6]<-0
Solid_feed3[Solid_feed3>=6]<-1
table(Solid_feed3)
Solid_feed4<- as.numeric(Q44_4_new)
Solid_feed4
Solid_feed4[Solid_feed4<6]<-0
Solid_feed4[Solid_feed4>=6]<-1
table(Solid_feed4)
Solid_feed5<- as.numeric(Q44_5_new)
Solid_feed5
Solid_feed5[Solid_feed5<6]<-0
Solid_feed5[Solid_feed5>=6]<-1
table(Solid_feed5)
Solid_feed6<- as.numeric(Q44_6_new)
Solid_feed6
Solid_feed6[Solid_feed6<6]<-0
Solid_feed6[Solid_feed6>=6]<-1
table(Solid_feed6)
Solid_feed7<- as.numeric(Q44_7_new)
Solid_feed7
Solid_feed7[Solid_feed7<6]<-0
Solid_feed7[Solid_feed7>=6]<-1
table(Solid_feed7)
Solid_feed8<- as.numeric(Q44_8_new)
Solid_feed8
Solid_feed8[Solid_feed8<6]<-0
Solid_feed8[Solid_feed8>=6]<-1
table(Solid_feed8)
Solid_feed9<- as.numeric(Q44_9_new)
Solid_feed9
Solid_feed9[Solid_feed9<6]<-0
Solid_feed9[Solid_feed9>=6]<-1
table(Solid_feed9)
Total_Solidfood<-
Solid_feed2|Solid_feed3|Solid_feed4|Solid_feed5|Solid_feed6|Solid_feed7|Solid_feed8|Solid_feed9
Total_Solidfood
table(Total_Solidfood)
##### Who gave liquids before six months #####3
##### Water before six months
Watb46 <- as.numeric(Q35_2_new & Q39_2_new)
Watb46[Q35_2_new==1 & Q39_2_new <6]<-1
Watb46[Q35_2_new==1 & (Q39_2_new >= 6 & Q39_2_new <25)]<-0
table(Watb46)
summary(Watb46)
#####Juice before six months
jusb46 <- as.numeric(Q35_1_new & Q39_3_new)
jusb46[Q35_1_new==1 & Q39_3_new <6]<-1
jusb46[Q35_1_new==1 & (Q39_3_new >= 6 & Q39_3_new <25)]<-0
table(jusb46)

```

```

summary(jusb46)
#####Cow milk before six months
cowb46 <- as.numeric(Q35_4_new & Q39_4_new)
cowb46[Q35_4_new==1 & Q39_4_new <6]<-1
cowb46[Q35_4_new==1 & (Q39_4_new >= 6 & Q39_4_new <25)]<-0
table(cowb46)
summary(cowb46)
#####soy milk given before six months
soyb46 <- as.numeric(Q35_5_new & Q39_5_new)
soyb46[Q35_5_new==1 & Q39_5_new <6]<-1
soyb46[Q35_5_new==1 & (Q39_5_new >= 6 & Q39_5_new <25)]<-0
table(soyb46)
summary(soyb46)
#####soup given before six months
soupb46 <- as.numeric(Q35_6_new & Q39_6_new)
soupb46[Q35_6_new==1 & Q39_6_new <6]<-1
soupb46[Q35_6_new==1 & (Q39_6_new >= 6 & Q39_6_new <25)]<-0
table(soupb46)
summary(soupb46)
#####tea given before six months
teab46 <- as.numeric(Q35_7_new & Q39_7_new)
teab46[Q35_7_new==1 & Q39_7_new <6]<-1
teab46[Q35_7_new==1 & (Q39_7_new >= 6 & Q39_7_new <25)]<-0
table(teab46)
summary(teab46)
#####yogourt given before six months
yogb46 <- as.numeric(Q35_8_new & Q39_8_new)
yogb46[Q35_8_new==1 & Q39_8_new <6]<-1
yogb46[Q35_8_new==1 & (Q39_8_new >= 6 & Q39_8_new <25)]<-0
table(yogb46)
summary(yogb46)
#####honey given before six months
honeyb46 <- as.numeric(Q35_9_new & Q39_9_new)
honeyb46[Q35_9_new==1 & Q39_9_new <6]<-1
honeyb46[Q35_9_new==1 & (Q39_9_new >= 6 & Q39_9_new <25)]<-0
table(honeyb46)
summary(honeyb46)
#####other drink given
otherb46 <- as.numeric(Q35_10_new & Q39_10_new)
otherb46[Q35_10_new==1 & Q39_10_new <6]<-1
otherb46[Q35_10_new==1 & (Q39_10_new >= 6 & Q39_10_new <25)]<-0
table(otherb46)
summary(otherb46)
#####Women who gave any liquid before six months
liqb46 <- as.numeric (Watb46 & jusb46 & cowb46 & soyb46 & soupb46 & teab46 & yogb46 &
honeyb46 & otherb46)
liqb46[Watb46==1|jusb46==1|cowb46==1|soyb46==1|soupb46==1|teab46==1|yogb46==1|honeyb46==1|
otherb46==1]<-1
table(liqb46)
##### Solid food given before six months #####
#####fufu given before six months

```

```

fufub46 <- as.numeric(Q40_1_new & Q44_1_new)
fufub46[Q40_1_new==1 & Q44_1_new <6]<-1
fufub46[Q40_1_new==1 & (Q44_1_new >= 6 & Q44_1_new <25)]<-0
table(fufub46)
summary(fufub46)
#####Soya porridge given before 6 months
soypob46 <- as.numeric(Q40_2_new & Q44_2_new)
soypob46[Q40_2_new==1 & Q44_2_new <6]<-1
soypob46[Q40_2_new==1 & (Q44_2_new >= 6 & Q44_2_new <25)]<-0
table(soypob46)
summary(soypob46)
##### imported porridge given before 6 months
imppob46 <- as.numeric(Q40_3_new & Q44_3_new)
imppob46[Q40_3_new==1 & Q44_3_new <6]<-1
imppob46[Q40_3_new==1 & (Q44_3_new >= 6 & Q44_3_new <25)]<-0
table(imppob46)
summary(imppob46)
#####corn porridge given before 6 months
corpob46 <- as.numeric(Q40_4_new & Q44_4_new)
corpob46[Q40_4_new==1 & Q44_4_new <6]<-1
corpob46[Q40_4_new==1 & (Q44_4_new >= 6 & Q44_4_new <25)]<-0
table(corpob46)
summary(corpob46)
#####meat given before 6 months
meatb46 <- as.numeric(Q40_5_new & Q44_5_new)
meatb46[Q40_5_new==1 & Q44_5_new <6]<-1
meatb46[Q40_5_new==1 & (Q44_5_new >= 6 & Q44_5_new <25)]<-0
table(meatb46)
summary(meatb46)
#####fish given before 6 months
fishb46 <- as.numeric(Q40_6_new & Q44_6_new)
fishb46[Q40_6_new==1 & Q44_6_new <6]<-1
fishb46[Q40_6_new==1 & (Q44_6_new >= 6 & Q44_6_new <25)]<-0
table(fishb46)
summary(fishb46)
#####rice given before 6 months
riceb46 <- as.numeric(Q40_7_new & Q44_7_new)
riceb46[Q40_7_new==1 & Q44_7_new <6]<-1
riceb46[Q40_7_new==1 & (Q44_7_new >= 6 & Q44_7_new <25)]<-0
table(riceb46)
summary(riceb46)
#####cereal given before 6 months
cerb46 <- as.numeric(Q40_8_new & Q44_8_new)
cerb46[Q40_8_new==1 & Q44_8_new <6]<-1
cerb46[Q40_8_new==1 & (Q44_8_new >= 6 & Q44_8_new <25)]<-0
table(cerb46)
summary(cerb46)
#####other solid food given before 6 months
othb46 <- as.numeric(Q40_9_new & Q44_9_new)
othb46[Q40_9_new==1 & Q44_9_new <6]<-1
othb46[Q40_9_new==1 & (Q44_9_new >= 6 & Q44_9_new <25)]<-0

```

```

table(othb46)
summary(othb46)
####Women who gave any solid food before 6 months
solidb46 <- (fufub46 & soypob46 & imp pob46 & corpob46 & meatb46 & fishb46 & riceb46 & cerb46 &
othb46 )
solidb46[fufub46==1|soypob46==1|imp pob46==1|corpob46==1|meatb46==1|fishb46==1|riceb46==1|cer
b46==1|othb46]<-1
table(solidb46)
##### Women who gave anything before 6 months #####
anyb46 <- (liqb46 & solidb46)
anyb46[liqb46==1|solidb46==1]<-1
table(anyb46)
##### Women who exclusively breastfeed before 6 months #####
ebfwk1 <- as.numeric(q22_new & Q23box5_new)
ebfwk1[((q22_new~=5) & q22_new ~= NA) & Q23box5_new==1]<-1
ebfwk1[q22_new==5|Q23box5_new~=1]<-0
table(ebfwk1)
#### create a proxy for EBF
proxyEBF<- as.numeric(anyb46 & ebfwk1)
proxyEBF[(anyb46~=0) & ebfwk1==1]<-1
table(proxyEBF)
summary(proxyEBF)
#####calculate breastfeeding and age and Multivariate Analysis #####
####create variable for SES
SES_index[SES_index==(-3)|SES_index==(-2)|SES_index==(-
1)|SES_index==0|SES_index==1|SES_index==2|SES_index==3]<-1
SES_index[SES_index==4]<-0
SES_index[SES_index==5|SES_index==6|SES_index==7|SES_index==8|SES_index==9|SES_index==1
0|SES_index==11|SES_index==12|SES_index==14]<-(-1)
table(SES_index)

##### create a character variable for the proxyEBF#####
#####Removing missing data in SES index and proxyEBF
summary(as.numeric(SES_index))
SES_Index <- na.omit(as.numeric(SES_index))
summary(SES_Index)

summary(proxyEBF)
proxyEBFT <- na.omit(as.numeric(proxyEBF))
summary(proxyEBFT)

summary(Age_mother)
table(Age_mother)
table(proxyEBF)
table(SES_index)
table(proxyEBFT, SES_Index, Age_mother)

table(proxyEBFT, Age_mother)
table(Age_mother, proxyEBFT)
table(SES_Index, proxyEBFT)
table(SES_Index, Age_mother, proxyEBFT)

```

```

mshapiro.test(SSES_Index, Age_mother, proxyEBFT)
#####
table(proxyEBF)
table(Age_mother)
table(SSES_index)
xtabs(~ SSES_index + Age_mother)
##### Logistic Regression #####
logistic <- glm(proxyEBF ~ SSES_index + Age_mother, binomial)
summary(logistic)
anova(logistic, test="Chisq")
model1 <- glm(proxyEBF ~ Age_mother, binomial)
summary(model1)
anova(model1, test="LRT")
model2 <- glm(proxyEBF ~ SSES_index, binomial)
summary(model2)
anova(model2, test="LRT")

```

## Guide d'enquêteur

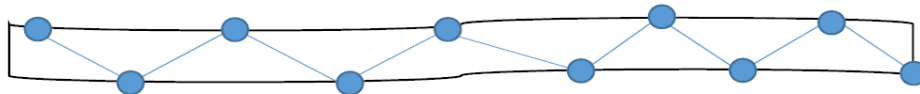
*Imprimer une copie pour équipe de deux enquêteurs*

---

### I. Générales

1. Par groupe de travail, on entend un ensemble d'étudiants affectés dans une aire de santé pour y collecter les données. Chaque groupe est composé des équipes. Chaque équipe est constituée de deux étudiants.
2. Dans une équipe, chaque étudiant a la responsabilité d'enquêter 5 ménages. Aucun étudiant ne devrait collecter seul les données au cours de cette enquête. Les étudiants d'un même groupe effectueront, par équipe de 2, les visites dans les ménages. Le premier étudiant effectuera la collecte des données dans les ménages, assisté par son coéquipier et, une fois son quota atteint, il assistera aussi le coéquipier pendant que celui-ci effectuera la collecte des données.
3. Pour identifier les ménages, le président de chaque groupe affectera ses équipes de la manière suivante: (1) la première équipe enquête les ménages situés sur l'avenue au centre de l'aire de santé ; (2) la seconde équipe enquête les ménages situés sur l'avenue en périphérie de l'aire de santé, et (3) la troisième équipe enquête les ménages situés sur l'avenue entre le centre et la périphérie de l'aire de santé.

Sur chaque avenue, estimer le nombre de parcelles; diviser ce nombre par 10 (nombre de ménages pour l'équipe). Au début de l'avenue, choisir le ménage du début à partir du bout d'un crayon lancé en l'air, comme ménage UN à enquêter. Continuer à collecter les données à chaque DIXIEME MENAGE, **EN ZIGZAGANT** comme suit :



4. Lors de votre présentation, en demandant de parler à un des adultes du ménage, si une mère allaitante ou ancienne allaitante n'a pas été identifiée parmi les adultes dans le ménage, dire merci à la personne qui vous a reçus et quitter le ménage vers un autre, immédiatement après le ménage exclu.
5. Pour les enfants cibles, NE PAS collecter les données pour les enfants de moins de 6 mois et ceux de plus de 24 mois.
6. Le code de la fiche de l'enquête est composé de 5 chiffres : 2 chiffres (cases) représentent le Groupe, 2 (cases) représentent le numéro de l'étudiant dans le groupe et le dernier chiffre (case) représente le numéro (rang) du questionnaire rempli.

7. Par exemple, une femme enquêtée par un étudiant du groupe 5, classé 7ème dans la liste des membres du groupe arrangée selon l'ordre alphabétique, et qui vient de remplir le premier questionnaire (1), le code de l'enquêtée sera de :

0 5 0 7 1

8. NB : pour le nombre du groupe ou le rang de l'étudiant sur la liste du groupe, faites précéder le chiffre de « 0 » si le nombre est inférieur à 10 et écrire tous les deux chiffres s'il est supérieur ou égal à 10. Par exemple, Groupe : 45 ; Etudiant : 9 ; ménage : 5

4 5 0 9 5

9. Les membres de l'équipe devront avoir le même nom, en SWAHILI, des concepts clés comme : « allaitement maternel, allaitement exclusif au sein, allaitement artificiel.

## II. Spécifiques à chaque question

Questions	Commentaires
1	Demander l'âge de la femme. Il peut également être calculé par l'année de naissance
2	Comme dans le questionnaire
3	Comme dans le questionnaire
4	Comme dans le questionnaire
5	Comme dans le questionnaire
6	Même si la femme ne peut pas être mariée, elle peut néanmoins connaître l'âge de son partenaire
7	Même si la femme ne peut pas être mariée, elle peut néanmoins connaître le niveau d'étude de son partenaire
8	Même si la femme ne peut pas être mariée, elle peut néanmoins connaître l'occupation de son partenaire
9	Comme dans le questionnaire
10	Comme dans le questionnaire
11	Comptez le total de personnes dans le ménage indépendamment du fait qu'elles sont enfants ou non du responsable de ménage
12	Il pourrait y avoir plusieurs sources d'approvisionnement en eau, MAIS à cette question, il faut demander celle qui est plus fréquemment utilisée par le ménage
13	Il pourrait y avoir plusieurs sources d'éclairage de la maison, MAIS à cette question, il faut demander celle qui est plus fréquemment utilisée par le ménage
14	<b>On définit par ENERGIE</b> , le moyen utilisé pour préparer les aliments dans le ménage. Il pourrait y avoir plusieurs sources d'énergie dans la maison, MAIS à cette question, il faut demander celle qui est plus fréquemment utilisée par le ménage.
15	A cette question, citez chaque bien et demandez à la femme de vous préciser si ce bien existe dans le ménage. Le ménage pourrait avoir plusieurs de biens cités. Cochez tous les biens possibles cités par la personne interviewée.
16	A cette question, laissez la femme vous citer la toilette utilisée par le ménage. NE PAS LUI PROPOSER DES REPONSES
17	Tenir compte seulement des naissances vivantes
18	Comme dans le questionnaire

19	Il s'agit de préciser si les femmes avaient accouché dans une structure de santé ou pas. IL NE S'AGIT PAS DE DONNER LE NOM DES STRUCTURES DE SANTE DANS LESQUELLES ELLES ONT ACCOUCHE
20	Il s'agit du mode d'accouchement. Répondre en fonction des assertions proposées dans le questionnaire
21	Donnez la date complète : jours/mois/année [si la mère ne connaît pas le jour exact mais connaît le mois, utilisez le 15/moi/Année
22	A cette question, LAISSEZ LA MERE VOUS PRECISER LE DELAI après lequel elle a mis l'enfant au sein. C'est ensuite à VOUS de déterminer l'assertion à laquelle correspond le temps donné par la femme. NE PAS LUI PROPOSER DES REPONSES Si la femme dit n'avoir jamais mis l'enfant au sein, alors SAUTEZ la Q23, et POSEZ la 24
23	A cette question, LAISSEZ LA MERE VOUS PRECISER la boisson donnée au bébé. Ensuite, VOUS remplirez l'espace blanc avec le code correspondant à l'assertion choisie. NE PAS LUI PROPOSER DES REPONSES
24	Comme dans le questionnaire
25	Comme dans le questionnaire
26	A cette question, LAISSEZ LA MERE VOUS CITER les options apprises dans les structures de santé. VOTRE TRAVAIL SERA DE COCHER la case de l'assertion qui correspond à celle citée par la mère. NE PAS LUI PROPOSER DES REPONSES
27	Comme dans le questionnaire
28	Pour cette question, COCHEZ juste dans la case vide au croisement de l'option et de la question 28, afin d'indiquer que cette option a été citée comme difficile à COMPRENDRE
29	Pour cette question, COCHEZ juste dans la case vide au croisement de l'option et de la question, afin d'indiquer que cette option a été citée comme difficile à APPLIQUER
30	Pour cette question, REMPLIR dans l'espace blanc au croisement de l'option et de la question, LE CODE DE LA RAISON PRINCIPALE (assertion) qui justifie que l'option citée par la mère est difficile à APPLIQUER
31	Laissez la mère vous citer les options choisies pour l'alimentation de son bébé. RAPPELLEZ-VOUS qu'elle peut citer plusieurs options.
32	Cette question sera posée uniquement aux femmes qui ont fait le choix de l'allaitement MATERNEL. Les mères pourraient donner plusieurs réponses. Cochez toutes les réponses données en fonction des assertions fournies sur le questionnaire. NE PAS PROPOSER LES REPONSES AUX MERES. <b>Attention</b> : ces mères peuvent avoir fait également le choix de l'allaitement artificiel
33	Cette question sera posée <u>uniquement</u> aux femmes qui ont fait le choix de l'allaitement ARTIFICIEL. Les mères pourraient donner plusieurs réponses. Cochez toutes les réponses données en fonction des assertions fournies sur le questionnaire. NE PAS PROPOSER LES REPONSES AUX MERES. <b>Attention</b> : ces mères peuvent avoir fait également le choix de l'allaitement maternel
34	Cette question sera posée <u>uniquement</u> aux femmes qui ont fait le choix de l'allaitement ARTIFICIEL. Les mères pourraient donner plusieurs réponses. Cochez toutes les réponses données en fonction des assertions fournies sur le questionnaire. NE PAS PROPOSER LES REPONSES AUX MERES <b>Attention</b> : ces mères peuvent avoir fait le choix de l'allaitement maternel
35	Les mères pourraient donner plusieurs réponses. Cochez chaque case correspondant à la réponse donnée en fonction des assertions fournies sur le questionnaire. NE PAS PROPOSER LES REPONSES AUX MERES

36	<p>Pour chaque boisson donnée, la mère pourrait donner plusieurs réponses. COMBINEZ les réponses possibles dans l'espace blanc approprié correspondant à la boisson donnée. NE PAS PROPOSER LES REPONSES AUX MERES.</p> <p>Remplir l'espace blanc avec la combinaison des assertions données par la mère. Par exemple : 135 signifie que la mère a donné les raisons correspondant aux codes : 1= <i>C'est ce que je pouvais avoir</i>, 3= <i>Il avait faim</i> et 5= <i>Ça a un bon goût</i></p>
37	<p>Pour chaque boisson donnée, la mère pourrait donner plusieurs réponses. COMBINEZ les réponses possibles dans l'espace blanc approprié correspondant à l'ustensile utilisé pour cette boisson. NE PAS PROPOSER LES REPONSES AUX MERES.</p> <p>Remplir l'espace blanc avec la combinaison des assertions données par la mère. Par exemple: 13 signifie que la mère a donné les raisons correspondant aux codes : 1= <i>Une cuillère</i>, 3= <i>Une assiette</i></p>
38	Pour chaque boisson, REMPLIR dans l'espace blanc au croisement de la boisson et de la Q38, la fréquence de sa consommation dans les 12 heures passées
39	Pour chaque boisson, REMPLIR dans l'espace blanc au croisement de la boisson et de la Q39, l'âge en mois du début de la consommation de cette boisson
40	Les mères pourraient donner plusieurs réponses. Cochez chaque case correspondant à la réponse donnée en fonction des assertions fournies sur le questionnaire. NE PAS PROPOSER LES REPONSES AUX MERES
41	<p>Pour chaque aliment donné, la mère pourrait donner plusieurs réponses. COMBINEZ les réponses possibles dans l'espace blanc approprié correspondant à l'aliment donnée. NE PAS PROPOSER LES REPONSES AUX MERES.</p> <p>Remplir l'espace blanc avec la combinaison des assertions données par la mère. Par exemple : 135 signifie que la mère a donné les raisons correspondant aux codes : 1= <i>C'est ce que je pouvais avoir</i>, 3= <i>Il avait faim</i> et 5= <i>Ça a un bon goût</i></p>
42	<p>Pour chaque aliment donné, la mère pourrait donner plusieurs réponses. COMBINEZ les réponses possibles dans l'espace blanc approprié correspondant à l'ustensile utilisé pour cet aliment. NE PAS PROPOSER LES REPONSES AUX MERES.</p> <p>Remplir l'espace blanc avec la combinaison des assertions données par la mère. Par exemple: 13 signifie que la mère a donné les raisons correspondant aux codes : 1= <i>Une cuillère</i>, 3= <i>Une assiette</i></p>
43	Pour chaque boisson, REMPLIR dans l'espace blanc au croisement de l'aliment et de la Q43, la fréquence de sa consommation dans les 12 heures passées
44	Pour chaque boisson, REMPLIR dans l'espace blanc au croisement de la boisson et de la Q44, l'âge en mois du début de la consommation de cette boisson
45	Comme dans le questionnaire
46	<p>Pour cette question, la mère pourrait donner plusieurs réponses. COMBINEZ les réponses possibles dans l'espace blanc approprié. NE PAS PROPOSER LES REPONSES AUX MERES.</p> <p>Remplir l'espace blanc avec la combinaison des assertions données par la mère. Par exemple : 135 signifie que la mère a donné les raisons correspondant aux codes : 1= <i>Le bébé commence à parler</i>, 3= <i>Le bébé ne veut plus être allaité</i> et 5= <i>Le bébé pousse ses premières dents</i></p>
47	<p>Pour cette question, la mère pourrait donner plusieurs réponses. COMBINEZ les réponses possibles dans l'espace blanc approprié. NE PAS PROPOSER LES REPONSES AUX MERES.</p> <p>Remplir l'espace blanc avec la combinaison des assertions données par la mère. Par exemple: 135 signifie que la mère a donné les raisons correspondant aux codes : 1= <i>Bananes pilées</i>, 3= <i>Les haricots</i> et 5= <i>L'arachide</i></p>

## Pratiques de l'allaitement et de la nutrition infantile

Code de l'enquêtée

groupe

étudiant

fiche

**Ce questionnaire doit être administré uniquement aux femmes allaitantes ou anciennes allaitantes**

Bonjour, je m'appelle \_\_\_\_\_ et je suis étudiant à l'Université de Lubumbashi. Nous faisons une enquête sur l'alimentation de l'enfant et voudrions poser quelques questions à un des adultes du ménage.

**Avez-vous un enfant de 6 mois à 2 ans dans votre ménage ?**

**Oui (continuez l'enquête) ➡ Si plusieurs enfants de cette tranche d'âge, collecter les données uniquement chez le moins âgé**

**Non (arrêtez et allez dans un autre ménage)**

Si vous êtes d'accord de participer à cette enquête, nous allons vous poser quelques questions sur l'alimentation de votre enfant de 6 mois et 2 ans qui habite dans votre ménage. L'enquête prendra environ 20 minutes. Nous ne noterons ni votre nom, ni celui de l'enfant. Nous ne partagerons pas les informations que vous nous donnez, sauf dans un rapport où toutes les informations seront agrégées. C'est possible que nous marquions la localisation du ménage. Nous vous signalons également que vous avez le droit de refuser de participer à cette enquête ou répondre à certaines questions.

**Avez-vous des questions pour moi ? Avez-vous compris, et êtes-vous d'accord pour la participation à cette enquête ?**

---

## Pratiques de l'allaitement et de la nutrition infantile

Code de l'enquêtée

groupe    étudiant    fiche

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Zone de santé	Aire de santé	Date de collecte des données
/...../	/...../	/...../

[Q1]	[Q2]	[Q3]	[Q4]	[Q5]	[Q6]	[Q7]	[Q8]	[Q9]	[Q10]
Quel est votre âge ?	Commune? <i>Lubumbashi=1 Kampemba=2 Katuba=3 Kenya=4 Rwashi=5 Kamalondo=6 Annexe=7</i>	Quel est votre Statut matrimonial ? <i>Mariée=1 Non mariée=2</i>	Votre Niveau d'étude ? <i>Aucun=0 Primaire=1 Secondaire=2 Supérieur &amp; Uni=3</i>	Votre Occupation ? <i>Ménage=1 Ventes=2 Agriculture=3 Fonction Publique=4 Entreprise publique=5 Entreprise privée=6 Métier libéral=7 Elève/Etudiante=8 Autres à préciser = 9</i> _____	Age du partenaire ?	Niveau d'étude du partenaire ? <i>Aucun=0 Primaire=1 Secondaire=2 Supérieur &amp; Uni=3 Ne sait pas = 88</i>	Occupation du partenaire ? <i>Ménage=1 Ventes=2 Agriculture=3 Fonction publique=4 Entreprise publique=5 Entreprise privée=6 Métier libéral=7 Minier=8 Elève/Etudiant=9 Autres à préciser = 10</i> _____	Qui est propriétaire de votre maison d'habitation ? <i>Locataire=1 Propriétaire=2 Maison familiale=3 Ne sait pas=88</i>	Quelle est votre relation avec le responsable du ménage ? <i>Epouse/ partenaire=1 Sœur=2 Fille=3 Petite fille=4 Responsable=5 Autres à préciser =6</i> _____
/...../	/...../	/...../	/...../	/...../	/...../	/...../	/...../	/...../	/...../

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groupe étudiant fiche

### Pratiques de l'allaitement et de la nutrition infantile

Code de l'enquête

[Q11]	[Q12]	[Q13]	[Q14]	[Q15]	[Q16]
Combien de personnes vivent dans votre ménage	Quelle est la source principale d'approvisionnement en eau de votre ménage ?  <i>Robinet=1 Camion-citerne=2 Puits creusés=3 Marigots=4 Puit ouvert=5 Autres à préciser=6</i>	Quelle est l'Eclairage principal de votre maison ?  <i>Electricité publique=1 Groupe électrogène=2 Lampe rechargeable=3 Lampe tempête=4 Bougies=5 Lampions=6 Huile=7 Autre à préciser=8</i>	Quelle est le moyen que vous utilisez pour préparer les aliments dans le ménage ?  <i>Electricité publique/Gaz=1 Charbon de bois=2 Buches=3 Chaume=4 Autre à préciser=5</i>	Parmi les biens ci-dessous lesquels avez-vous dans le ménage ? <i>Encerclez les biens présents</i>  <i>Parcelle=1 Congélateur-frigo=2 Télé en couleur=3 Lecteur DVD=4 Téléphone=5 Véhicule=6 Ordinateur=7 Vélo=8 Moto=9 NVP=10 Meubles=11</i>	Quel type de toilette utilisez-vous dans votre ménage ?  <i>A chasse=1 Turque=2 A jet d'eau=3 Cuve=4 Ailleurs=5 Autres à préciser=6</i>
/...../	/...../	/...../	/...../	/...../	/...../

[Q17]	[Q18]	[Q19]	[Q20]	[Q21]	[Q22]	[Q23]	[Q24]	[Q25]
Combien de fois avez-vous déjà donné naissance à un enfant vivant ?	Aviez-vous suivi les consultations prénatales au cours de la grossesse de ce bébé ?  <i>Oui=1 Non=2</i>	Où avez-vous accouché ?  <i>Dans une structure de santé=1  A domicile ou en route=2</i>	De quelle manière avez-vous accouché  <i>Par voie basse (sans instruments) =0  Par césarienne=1  Avec les instruments=3</i>	<i>Date d'accouchement</i>	Dès l'accouchement, après combien de temps avez-vous commencé à allaiter votre bébé ?  <i>Dans l'heure après =1 Entre 1 heure et 6 heures après l'accouchement=2 Entre 7 heures et 24 heures (un jour) = 3 1 jour après ou plus=4 Jamais=5 [aller à la Q24]</i>	Parmi les boissons ci-dessous, lesquels avez-vous donné au bébé au cours de la première semaine après l'accouchement ?  <i>De l'eau bouillie=1 Du miel=2 De l'eau sucrée=3 Lait maternisé=4 Aucun = 5 Autre à préciser = 6</i>	A ce jour, quel est l'âge de cet enfant (mois) ?	Jusqu'à ce jour, continuez-vous d'allaiter (au sein) votre enfant ?  <i>Oui=1 Non=2</i>
/...../	/...../	/...../	/...../	/...../	/...../	/...../	/...../	/...../

groupe    étudiant    fiche  
         

**Pratiques de l'allaitement et de la nutrition infantile**

Code de l'enquêtée

Informations reçues au centre de santé sur l'allaitement et la nutrition infantile et choix de l'option pour le bébé

[Q26]	[Q27]	[Q28]	[Q29]	[Q30]	[Q31]
Pouvez-vous nous citer les options d'alimentation de votre enfant dont on vous a parlé par le personnel de santé lors de votre séjour à la consultation prénatale ou à la maternité ?  <b>Cochez celles qui sont citées par la mère</b>	Parmi les options d'alimentation dont on vous a parlé, y-a-t-il celles que vous avez trouvé <b>difficile à comprendre</b> ?  Oui=1 Non=2 [passer à Q31]	Si oui ;  Dites celles que vous avez trouvé difficile à comprendre ?  Oui=1 Non=2	Y-a-t-il des options alimentaires que vous avez trouvé <b>difficile à appliquer</b> ?  Oui=1 Non=2 [passer à Q31]	Pour l'option difficile à appliquer, dites pourquoi vous l'avez trouvée difficile à <b>appliquer</b> ? Je travaille=1 Le lait coute cher=2 L'enfant n'est pas rassasié=3 Non acceptable par mon partenaire=4 Conservation=5 Autre, à préciser=6 _____	Quelle (s) option [s] alimentaire avez-vous choisi ?  <b>(Cochez la case correspondant à l'option choisie par la mère : options identifiées à Q26)</b>
	/...../	/...../	/...../	/...../	/...../
Allaitement exclusif au sein jusqu'à 6 mois		/...../	/...../	/...../	/...../
Allaitement au lait artificiel		/...../	/...../	/...../	/...../
Allaitement au lait de vache		/...../	/...../	/...../	/...../
Allaitement au lait maternel chauffé		/...../	/...../	/...../	/...../
Allaitement avec du lait maternel de la banque du lait		/...../	/...../	/...../	/...../
Allaitement par une nourrice		/...../	/...../	/...../	/...../
<b>Absente du Centre de santé= 88</b>					

Remplir en fonction des options d'alimentation choisie pour le nourrisson par la mère

Allaitement au sein	Allaitement au lait artificiel	
[Q32]	[Q33]	[Q34]
Pour les femmes qui ont fait le choix de l'Allaitement au sein, demander <b>Pourquoi avez-vous choisi d'allaiter ? Encercler toutes les réponses données par la mère</b>  Je ne pouvais pas acheter du lait artificiel=1 On doit toujours allaiter=2 Lait maternel est meilleur=3 Autre à préciser =4 _____ /...../	Pour les femmes qui ont fait le choix d'Allaitement au lait artificiel (poudre maternisé ou non), demander <b>Pourquoi avez-vous choisi de donner du lait artificiel ? Encercler toutes les réponses données par la mère</b>  Pour des raisons médicales (par exemple, séropositivité ou autres) =1 On m'a donné du lait artificiel=2 Mal au sein=3 Pas de lait dans le sein=4 Autre à préciser =5 _____ /...../	Pour les femmes qui n'ont pas fait le choix de l'Allaitement au lait artificiel, demander <b>Pourquoi n'avez-vous pas choisi de donner du lait artificiel ? Encercler toutes les réponses données par la mère</b>  C'est trop cher=1 On allait se moquer de moi=2 Le lait maternel est une bonne nourriture pour le bébé=3 Risque des maladies pour le bébé=4 Autre à préciser =5 _____ /...../

Afficher la page suivante (touche fléchée droite)

groupe étudiant fiche

## Pratiques de l'allaitement et de la nutrition infantile

Code de l'enquêtée

### Liste des boissons et aliments donnés au bébé dans les dernières 12 heures

A BOIRE					A MANGER		
[Q35]	[Q36]	[Q37]	[Q38]	[Q39]	[Q40]	[Q41]	[Q42]
Dites-moi tout ce que vous avez donné à votre enfant à <b>boire</b> , y inclus le lait maternel, l'eau, le jus de fruits, tout au cours des 12 dernières heures.	Pourquoi avez-vous donné ceci à l'enfant ? <i>Combinez les réponses possibles dans la case appropriée.</i>  C'est ce que je pouvais avoir =1 C'est ce qu'il aime manger=2 Il avait faim =3 C'est le plus nutritif=4 Ça a un bon goût=5 Je voulais le faire=6 Il avait la constipation=7 Autre à préciser =8	Quel ustensile avez-vous utilisé pour donner à l'enfant ? <i>Combinez les réponses possibles dans la case appropriée.</i>  Une cuillère=1 Un biberon=2 Une assiette=3 Aucune (sein)=4  Autre à préciser =5	Combien de fois est-ce que l'enfant a consommé ceci pendant les 12 dernières heures ?	A partir de quel âge (mois) avez-vous commencé à donner cette boisson à votre bébé ?	Dites-moi tout ce que vous avez donné à votre enfant à <b>manger</b> au cours des 12 dernières heures.	Pourquoi avez-vous donné ceci à l'enfant ? <i>Combinez les réponses possibles dans la case appropriée.</i>  C'est ce que je pouvais avoir =1 C'est ce qu'il aime manger=2 Il avait faim=3 C'est le plus nutritif=4 Ça a un bon goût =5 Je voulais le faire=6 Il avait la constipation =7 Autre à préciser =8	Quel ustensile avez-vous utilisé pour donner ça à l'enfant ?  Une cuillère=1 Une assiette =2 Mains=3  Autre, précisez
Oui=1 Non=2					Oui=1 Non=2		
Lait maternel	/...../	/...../	/...../	/...../	Foufou	/...../	/...../
Eau	/...../	/...../	/...../	/...../	Bouillie de soja	/...../	/...../
Jus	/...../	/...../	/...../	/...../	Bouillie importée	/...../	/...../
Lait de vache	/...../	/...../	/...../	/...../	Bouillie de maïs	/...../	/...../
Lait de soja	/...../	/...../	/...../	/...../	Viande	/...../	/...../
Soupe	/...../	/...../	/...../	/...../	Poisson	/...../	/...../
Thé	/...../	/...../	/...../	/...../	Riz	/...../	/...../
Yaourt & Lait caillé	/...../	/...../	/...../	/...../	Céréales	/...../	/...../
Miel	/...../	/...../	/...../	/...../	Autre, à préciser	/...../	/...../
Autres à préciser	/...../	/...../	/...../	/...../			

Afficher la page suivante (touche fléchée droite)

groupe étudiant fiche

## Pratiques de l'allaitement et de la nutrition infantile

Code de l'enquêtée

Sevrage des bébés				
[Q43]	[Q44]	[Q45]	[Q46]	[Q47]
Combien de fois est-ce l'enfant a consommé ceci pendant les 12 dernières heures ?	A partir de quel âge (mois) avez-vous commencé à donner cet aliment à votre bébé ?	A votre avis, à quel âge (en mois) doit-on arrêter de mettre un bébé au sein ?	<p>A votre avis, comment peut-on savoir que le bébé est prêt à arrêter le sein ? Encerclez toutes les réponses données par la mère</p> <p> <i>Le bébé commence à parler=1</i>  <i>Le bébé commence à marcher=2</i>  <i>Le bébé ne veut plus être allaité=3</i>  <i>La maman devient à nouveau enceinte=4</i>  <i>Le bébé pousse ses premières dents=5</i>  <i>Le bébé veut manger avec la famille=6</i>  <i>Le bébé ne tète pas souvent=7</i>  <i>Autre, veuillez spécifier=8</i> </p>	<p>A votre avis, quand un bébé arrête d'être allaité, quels sont les aliments qu'il doit recevoir ? Encerclez toutes les réponses données par la mère</p> <p> <i>Bananes pilées=1</i>  <i>Les céréales (tels que le maïs, le cerelac)=2</i>  <i>Les haricots=3</i>  <i>Petits pois=4</i>  <i>L'arachide=5</i>  <i>Les légumes=6</i>  <i>Bouillie de fofou=7</i>  <i>Bouillie enrichie=8</i>  <i>Autre, veuillez spécifier=9</i> </p>
Foufou	/...../	/...../	/...../	/...../
Bouillie de soja	/...../	/...../		
Bouillie importée	/...../	/...../		
Bouillie de maïs	/...../	/...../		
Viande	/...../	/...../		
Poisson	/...../	/...../		
Riz	/...../	/...../		
Céréales	/...../	/...../		
Autre, à préciser	/...../	/...../		

Fait à Lubumbashi, le ...../...../2017

Signature de l'enquêteur