

Effect of a Nutrition Education Intervention on Mothers' Infant and Young Child Feeding Knowledge and Practices in the Peri-Urban Areas of Bobo-Dioulasso: Before and after Study

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Abstract

Background: This study assessed the effect of a nutrition education intervention aiming to improve the knowledge and practices of under 5 years children's mothers on infant and young child feeding in peri urban areas of Bobo-Dioulasso in Burkina Faso. **Methods:** A total of 243 mothers of children under 5 years in the peri-urban of Bobo-Dioulasso were surveyed before and after the intervention using the FAO questionnaire for infant and young child feeding (IYCF) knowledge and practices assessment in January and October 2017. The intervention included two components consisting of a theoretical phase (counselling and discussion) and cooking demonstrations implemented for ten months. To account for the before-and-after design of the study, the McNemar's test was used to assess the effect of the intervention on mothers' infant and young child feeding knowledge and practices. **Results:** The mean age of mothers was 29 ± 6.2 years and 50.6% of the mothers were between 20 and 29 years old. All indicators used to assess the mothers' knowledge of breastfeeding and complementary feeding significantly improved after the intervention (all p-values < 0.05). In terms of child feeding practices, half of

the indicators (early breastfeeding initiation, age of complementary feeding initiation, and minimum meal frequency) significantly increased (all $p = 0.001$) while two indicators (minimum dietary diversity, and minimum acceptable diet) did not change ($p = 0.06$ and 0.67) after the intervention. Finally, continued breastfeeding, significantly declined after the intervention (73.3% vs 86.0% $p = 0.001$). **Conclusion:** The intervention improved the mothers' knowledge on breastfeeding and complementary feeding and some child feeding practices. This study provided some evidence of an effective nutrition education intervention to increase maternal knowledge and practices.

Keywords

Nutrition Intervention, Mothers' Nutrition Knowledge, Child Feeding Practices

1. Introduction

In 2011, under-nutrition, consisting of fetal growth restriction, stunting, wasting, and vitamin A and zinc deficiencies, along with suboptimal breastfeeding, was estimated to underlie about 3.1 million under-five deaths, corresponding to 45% of all deaths in this age group [1]. Malnutrition rates increase between 6 and 18 months, the period of complementary feeding. Inappropriate practices such as the delayed introduction of complementary foods, low energy and nutrient density of foods offered, feeding in small amounts at meals, and food restrictions due to cultural beliefs are common [2]. In the 2021 national nutrition survey, 21.6% and 9.7% of under-5 children were estimated to suffer from stunting and wasting respectively in Burkina-Faso.

Healthy and appropriate complementary nutrition is one of the important health goals during childhood [3]. Identifying approaches to reduce the prevalence of malnutrition particularly in the vulnerable first 2 years of life is a priority in developing countries. Finally, appropriate infant and young child feeding (IYCF) improves childhood growth, increases the intellectual capacity of children, and reduces the risk of mothers experiencing mellitus diabetes, overweight and obesity [1] [4].

Improvements in nutrition will therefore be essential to the achievement of the Sustainable Development Goal (SDG) target 2.1 and 2.2 aiming to respectively end hunger and all forms of malnutrition in children under five years of age, by 2025 [5].

In Burkina Faso, government and non-governmental organizations have implemented various maternal and child health-related policy and program interventions over the last two decades to improve the knowledge and practices related to infant and young child feeding in the population in general and among specific groups such women of reproductive age, pregnant and lactating women in particular. However, there are still concerns about the appropriateness of infant and young child feeding nationally and at subnational level in Burkina Faso.

The 2021 national nutrition survey revealed that the prevalence of early initiation of breast-feeding (EIBF) was 61.2% and that of exclusive breastfeeding and continued breastfeeding were 56.9% and 94.4%, respectively, with a wide heterogeneity across regions and provinces. Additionally, the proportion of children who met the minimum dietary diversity (MDD), minimum meal frequency (MMF) and the minimum acceptable diet was 33%, 69.7% and 26.6%, respectively [6].

Improving the ways in which children are fed is one of the strategies for preventing stunting. Results from previous studies provided support for interventions designed to increase maternal knowledge of nutrition and child feeding practices to prevent stunting [7] [8].

An important public health question is whether educational programs aiming at improving infant feeding will accelerate the reduction of undernutrition [2]. Educational interventions were shown to improve feeding practices, but few of these studies were controlled trials [9] [10]. Furthermore, these previous studies tended to be on a small scale, and the strategies adopted were not necessarily sustainable in primary health care systems and community-based facilities that generally worked under considerable resource constraints.

From January 2017 to October 2017, a nutrition education intervention was implemented to improve infant and young child feeding practices in peri-urban area of Bobo-Dioulasso region of Burkina Faso.

Baseline findings highlighted suboptimal infant and young child feeding (IYCF) practices by mothers of children under 5 years of age [11]. Data collected during the endline survey among the same mothers are analyzed in this present study for comparison with the baseline survey data to assess the effect of the nutrition education intervention on mothers' knowledge and practices related to infant and young child feeding.

2. Materials and Methods

2.1. Study Setting and Period

The study was carried out among mothers of under 5 years children who lived in all the peripheral sectors of Bobo-Dioulasso, the second largest city and the economic capital of Burkina Faso. The baseline was completed at the beginning of January 2017 and the endline at the end of October 2017.

2.2. Evaluation Design

This was a quasi-experimental study with a pre- and post-intervention design used to assess the effect of the nutrition education intervention.

2.3. Study Population, Sample Size and Sampling

The study population was mothers of children under 5 years of age. The Emergency Nutrition Assessment (ENA) software

[\(<https://smartmethodology.org/survey-planning-tools/smart-emergency-nutritio>\)](https://smartmethodology.org/survey-planning-tools/smart-emergency-nutritio)

[n-assessment/](#)) was used to calculate the sample [12]. Using a proportion of children meeting the minimum acceptable diet in Bobo-Dioulasso set at 9.5% [13] a precision of 5% and a design effect of 1.5; we obtained a sample size of 216 inflated to 243 accounting for at least 10% non-response rate. Mothers/caregivers of under-5 children who live in peri-urban seven peri-urban neighborhoods of Bobo-Dioulasso: (sectors 11, 15, 17, 21, 22, 24 and 25) and who accepted to participate in the study were recruited after provision of an oral consent. All mothers of under-5 children in the seven peri-urban sectors of the city of Bobo-Dioulasso constituted the source population. These mothers were randomly selected.

2.4. Description of the Intervention: Nutrition Education Method

The principle of the nutrition education intervention was based on the study from Isobel R Contento [10]. The intervention had two components: 1) the first part of the nutrition education was a theoretical phase. This phase consisted of providing counselling to mothers to build skills for appropriate infant and young child feeding practices and cooking skills; 2) the second part was an action component based on breastfeeding practices and cooking demonstrations for complementary feeding, to facilitate mothers' ability to practice through cooking demonstrations [10].

For the theoretical phase, the modules of the nutrition education were designed based on the IYCF practice gaps identified in the community during the baseline survey of the study [11].

The practical phase of the intervention consisted of cooking demonstrations and took place every time after training. These demonstrations took place in the households of community leaders where study participants gathered.

The nutrition education training of mothers started immediately after the baseline survey in January 2017 and ended in October 2017 before the endline survey. Trained community-based health workers provided the training to mothers in Dioula, the local language, and French. Training sessions were conducted for ten consecutive months. Each session was done once a week. The duration of each training session was 2 hours. Face-to-face counseling was provided in addition to the practical demonstration. Active lectures, posters, note pad, brochures, and practical culinary demonstrations were the tools/methods used during the nutrition education training sessions. Manual standard-based posters and guidelines use in previous studies by Avula *et al.* and Muluye *et al.* were used for the training sessions [14] [15].

Key messages provided during the training sessions included: breastfeeding, dietary diversification, amount and frequency of feeding, and local recipes for complementary feeding.

2.5. Data Collection

Community health workers were trained for data collection during one week on all procedures of nutrition education. Baseline and endline data were collected

using the same semi structured questionnaire. The questionnaire was administered by the same trained data collectors to reduce the noise introduced in data by multiple enumerators. The questionnaire consisted of a list of items assessing mothers' knowledge and practices regarding infant and young child feeding including questions on sociodemographic and economic characteristics [16]. These mothers/caregivers were interviewed using a structured questionnaire developed based on the guidelines document of the United Nations Food and Agriculture Organization (FAO) for assessing nutrition related knowledge, attitudes and practices from the United Nations Food and Agriculture Organization (FAO) [17].

2.6. Study Variables

2.6.1. Variables for Assessing the Effectiveness of the Intervention

The evaluation of the nutrition education intervention was focused on changes in the knowledge, and practices of mothers of children after the intervention. The variables for IYCF knowledge were: 1) Knowledge of meaning of exclusive breastfeeding; 2) Knowledge of recommended duration of exclusive breastfeeding; 3) Knowledge of the age of complementary feeding initiation; 4) Knowledge of dietary diversity and ways of enriching porridge; 5) Reasons for initiating complementary feeding at six months, 6) Knowledge of continued breastfeeding. The variables for IYCF practices were 1) Initiation of early breastfeeding; 2) Continued breastfeeding; 3) Age of complementary feeding initiation 4) Minimum dietary diversity; 5) Minimum meal frequency and 6) Minimum acceptable diet.

2.6.2. Independent Variables

These variables were maternal age, education, religion, marital status, occupation; and child age and sex.

2.7. Data Management and Analysis

Data were entered using EpiData 3.1. software. In addition to the internal consistency checks that were set when the data entry program was developed, the database was cleaned beforehand. Data analysis was performed using SPSS 25 software. For the descriptive analysis each variable was summarized using frequency/percentage and 95% confidence interval, or mean and standard deviation depending on the type of the variable. The effect of the intervention was assessed using the McNemar's test. P-value less than 0.05 were considered statistically significant.

2.8. Ethical Considerations

The required permissions were obtained from the regional Director of health and from the chief doctors of the health districts of Do and Dafra in the Hauts-Bassins region. The informed consent of the participants (mothers of children) was requested before any interview. The participants had the right to withdraw from the study at any stage and were assured about the confidentiality of their answers.

3. Results

3.1. Socioeconomic Characteristics of the Mothers and Children Included in the Assessment Surveys Carried out before and after the Nutrition Education Intervention

A total of 243 mothers of children under-5 were included in the baseline and endline assessment surveys. The characteristics of children and their mothers are presented in (Table 1). The mean age of mothers was 29 ± 6.2 years. About half

Table 1. Socioeconomic characteristics of the mothers and children included in the assessment surveys carried out before and after the nutrition education intervention.

Variables	Frequency (n)	Percentage (%)
Maternal age categories (years)		
≤19	14	5.8
20 - 29	123	50.6
≥30	106	43.6
Maternal religion		
Muslim	183	76.3
Catholic	43	17.9
Protestant	14	5.8
Maternal education		
No schooling	143	59.6
Primary	62	25.8
Secondary and higher	35	14.6
Maternal marital status		
Single	8	3.3
Couple	235	96.7
Maternal occupation		
Employed	65	27.7
Unemployed	170	72.3
Child age categories (months)		
<6	4	1.6
6 - 11	34	14.0
12 - 23	93	38.3
≥24	112	46.1
Child sex		
Male	117	48.1
Female	126	51.9

(50.6%) of the mothers were between 20 and 29 years old. In addition, 59.6% of the mothers had no school education, and more than two thirds of them were not employed (Table 1).

3.2. Maternal Knowledge on Infant and Young Child Feeding before and after the Nutrition Education Intervention

According to Table 2, the results show the effect of the nutrition education intervention on mothers' IYCF knowledge. There was an effect of the intervention on all the IYCF knowledge indicators with statistically significant differences between the endline and baseline surveys. The proportions of mothers with the specific set of knowledge increased at the end of the intervention. The proportions of mothers with appropriate IYCF knowledge were significantly higher during the endline survey compared to the baseline for all the IYCF knowledge indicators: knowledge of the meaning of exclusive breastfeeding (99.2% vs. 93.4%), knowledge of recommended duration of exclusive breastfeeding (94.4% vs. 92.9%), knowledge of dietary diversity and ways of enriching porridge (97.5% vs. 88.5%), knowledge of the age of complementary feeding initiation (95.1% vs. 75.3%), reasons for complementary feeding initiation at six months (97.9% vs. 93.4%) and knowledge of continued breastfeeding (84.0% vs. 67.1%).

3.3. Maternal IYCF Practices before and after the Nutrition Education Intervention

Table 3 presents the effect of the nutrition education intervention on maternal IYCF practices. There was a positive effect of the intervention on three of the six indicators of IYCF practice assessed in this study. The proportions of mothers who reported practicing the early initiation of breastfeeding, initiating the

Table 2. Comparison of maternal knowledge on infant and young child feeding before and after the nutrition education intervention.

Variables	Before the intervention n (%)	After the intervention n (%)	p-value ^a
Knowledge of meaning of exclusive breastfeeding	227 (93.4)	241 (99.2)	0.001
Knowledge of recommended duration of exclusive breastfeeding	210 (92.9)	213 (94.4)	0.04
Knowledge of continued breastfeeding	163 (67.1)	204 (84.0)	0.001
Knowledge of age of complementary feeding initiation	183 (75.3)	231 (95.1)	0.001
Reasons for complementary feeding initiation at six months	227 (93.4)	238 (97.9)	0.03
Knowledge of dietary diversity and ways of enriching porridge	215 (88.5)	237 (97.5)	0.001

a: McNemar's tests; p-value < 0.05 was considered significant.

Table 3. Comparison of maternal IYCF practices before and after the nutrition education intervention.

Variables	Before the intervention n (%)	After the intervention n (%)	p-value ^a
Early initiation of breastfeeding	162 (66.7)	231 (95.1)	0.001
Continued breastfeeding	209 (86.0)	178 (73.3)	0.001
Age of complementary feeding initiation	119 (49.0)	201 (82.7)	0.001
Minimum dietary diversity	40 (23.0)	25 (14.4)	0.06
Minimum meal frequency	119 (49.0)	201 (82.7)	0.001
Minimum acceptable diet	31 (12.8)	27 (11.1)	0.67

^a: McNemar's tests; p-value < 0.05 was considered significant.

complementary feeding at the appropriate age and providing the minimum meal frequency were significantly higher (by about 29, 33, and 33 percentage points, respectively) during the endline survey compared to the baseline. However, the proportion of mothers practicing continued breastfeeding significantly decreased by about 13 percentage points. There was no significant difference for minimum dietary diversity (14.4% vs 23.0%, $p = 0.06$) and minimum acceptable diet at the end of the intervention (11.1% vs 12.8%, $p = 0.67$) (Table 3).

4. Discussion

This is the first known study that assessed the effect of a nutrition education intervention on mothers' knowledge and practices related to infant and young child feeding in Burkina Faso. The nutrition education intervention improved all the indicators of the mothers' knowledge in relation with IYCF. Specifically, the proportions of mothers with appropriate knowledge on meaning and recommended duration of exclusive breastfeeding, continued breastfeeding, age of complementary feeding initiation, reasons for timely initiation of complementary feeding, and dietary diversity significantly increased after the intervention. However, only half of the indicators of the mothers' practices related to IYCF improved at the end of the intervention compared to the beginning. The proportions of mothers who had adequate practices with regard to early initiation of breastfeeding, age of complementary feeding initiation and minimum meal frequency were significantly higher after the intervention.

The improvement observed in mothers' knowledge and practices related to IYCF could be explained by the length of the nutrition education intervention period as a 10-month exposure to counselling and demonstrations have more chance to influence the behavior of the participants. The intervention renewed enthusiasm for the appropriate practices of breastfeeding and complementary feeding. The results obtained in this study are in line with several other interventional studies such as the study of Starkweather *et al.*, conducted in rural Indo-

nesia among mothers where they reported an increase of the mothers' level of childhood feeding knowledge [18].

Another study carried out in Iran found that an appropriate nutrition education program based on communication theory can change the knowledge and beliefs of caregivers and child-feeding practices, thereby improving child growth [19]. The findings of the present study are also consistent with results documented in Kenya, where a nutrition education intervention positively changed mothers' knowledge regarding appropriate infant and young child feeding. Similar results were also reported by several studies for the improvement of maternal practices related to breastfeeding and complementary feeding [20]. In addition to the duration of the intervention mentioned above, there are other possible explanations include the two settings (in health facilities and in communities) where the intervention was conducted simultaneously which increased the potential for effect on mothers' knowledge and practices. These explanations were relayed by a study conducted in Mexico [21]. During the nutrition education, emphasis was placed on the knowledge and practices of breastfeeding and complementary feeding. This was also reported by Ahishakiye *et al.* in the study that carried out in rural Rwanda where mothers were aware of the WHO recommendations [22]. A study conducted in Ethiopia promoting an intervention package including skin-to-skin contact (SSC) and exclusive breastfeeding at both health facility and community levels reported an improvement in mothers' practices related to SSC and exclusive breastfeeding [23]. Additionally, a systematic review assessing the effect of breastfeeding promotion interventions via education showed that the effect on breastfeeding practices of mothers is higher when the interventions were delivered at both health facility and community levels compared to the effect achieved when delivered at the community level alone [24].

The practices of the complementary feeding were mainly based on minimal acceptable minimum dietary diversity, minimum meal frequency and minimum acceptable diet. Inadequate infant and young child feeding (IYCF) practices are main global issues and determinants of under nutrition, optimal growth, and development, especially in the first 2 years of life [25]. In peri-urban of Bobo-Dioulasso, the proportions of children meeting MDD, MMF and MAD were low at the baseline and similar to the findings of one study in Sierra Leone [26]. This is in line with the results of a meta-analysis conducted for Sub-Saharan African countries [27]. MDD, MMF, and MAD are often difficult to change, and the change observed for MMF at the end of the intervention in the current study was also reported in previous studies in Indonesia [17], in Kenya [28] and in Ethiopia [29]. The practice of complementary feeding is always influenced by other factors especially food availability at home, attitude of the caregiver, and family socioeconomic status as well as person who prepares the food for the family [30]. Muluye *et al.* provided the similar explanations [15]. In a different study in Burkina Faso, Olney *et al.* observed moderate impacts of their behavior change communication intervention on adoption of optimal IYCF practices and

household dietary diversity [31]. Furthermore, Guldan *et al.* in China reported that a one-year educational intervention showed significant change in mother's practices of complementary feeding in the intervention group [32]. Finally, the current study did not find any effect of the nutrition education intervention on MDD and MAD which is consistent with the findings of a past study in Ethiopia where no difference in IYCF practices was observed between mothers exposed to a nutrition education compared to those not exposed [7]. In contrast, the study of Waswa *et al.* in western Kenya was conducted over a period of 1 year showed that the nutrition education intervention led to improvements in children's dietary diversity [33] and it was the same the study of Kuchenbecker *et al.* in Malawi conducted over 3 years [34]. Perhaps as reported in the study of Guldan *et al.* in China, extending the duration of the intervention over a year would have potentially improved MDD and MAD [32].

The major limitation of the intervention was the inability to include the heads of households along with the mothers in the intervention as they are supposed to be the food providers of the households. And this might have an implication in terms of infant and young children feeding.

5. Conclusion

This study showed that the 10-month nutrition education intervention was effective in improving mothers' knowledge and practices regarding infant and young child feeding in the peri-urban areas of Bobo-Dioulasso, in Burkina Faso. The proportions of mothers with appropriate knowledge on breastfeeding and complementary feeding significantly increased after the intervention. There was also an improvement in mothers' practices on breastfeeding due to the intervention. Finally, the proportion of children meeting the minimum meal frequency significantly increased but the proportions of children meeting the minimum dietary diversity and the minimum acceptable diet at the end of the intervention too. The approach used to deliver this nutrition education package could be scaled and disseminated in other peri-urban areas of Burkina Faso. Other studies on urban areas will be necessary in order to potentially generalize this nutrition education intervention to the entire region of Bobo-Dioulasso and Burkina Faso.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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Appendix. Adaptable Questionnaire

Appendix: Questionnaires of Knowledge, attitudes and practices adaptable from FAO publication Guidelines for assessing nutrition-related knowledge, attitudes and practices (2014), also called KAP manual, available at: <http://www.fao.org/docrep/019/i3545e/i3545e00.htm>

Informed consent and confidentiality of interviews

Good morning/afternoon, Mr/Mrs _____. We are from Université Nazi Boni from Bobo-Dioulasso. We are working on a project concerned with nutrition and education in which you could participate/participated. Now, the project is almost finished and we are completing a survey among participants to know more about their knowledge, attitudes and practices to do with nutrition. The interview will take. All the information we obtain will remain strictly confidential and your answers and name will never be revealed. Also, you are not obliged to answer any question you do not want to, and you may stop the interview at any time.

The objective of this study is to evaluate the effect of an nutrition education intervention among mothers of children in the peri-urban areas of Bobo-Dioulasso. This is not to evaluate or criticize you, so please do not feel pressured to give a specific response and do not feel shy if you do not know the answer to a question. I am not expecting you to give a specific answer; I would like you to answer the questions honestly, telling me about what you know, how you feel, the way you live and how you prepare food. Feel free to answer questions at your own pace.

Do you agree to participate in this interview?

Yes ___ No ___ *If yes, continue to the next question; if no, stop the interview.*

Do you have any question before we start? (*Answer questions*).

May I start now?

Sociodemographic questionnaire for caregivers

Caregiver

1. Name and code	What is your name? <i>Insert respondent code</i>	-----
2. Sex	<i>Insert the sex of the caregiver</i>	Male <input type="checkbox"/> Female <input type="checkbox"/>
3. Relationship	What is your relationship with the child you take care of?	Mother <input type="checkbox"/> Father <input type="checkbox"/> Grandmother/Grandfather Other <input type="checkbox"/>
4. Caregiver's age	When is your birthday? <i>Probe if necessary.</i> On what day and in which month and year were you born? How old are you? <i>Probe if necessary.</i> What was your age at your last birthday? <i>If the information conflicts with the previous question, determine which one is more accurate</i>	__/__/____ day month year Age in completed years --
5. Parity (only for women)	How many children do you have? <i>For pregnant women: ask if this is her first pregnancy</i>	Number of children_____ First pregnancy <input type="checkbox"/>

Continued

6. Geographical characteristics	Where do you live? <i>Adapt to the local geographical characteristics: district, city, village, section, tribe, etc.</i>	District _____ City _____ Village _____ Section _____ Other _____
7. Educational level	Have you ever attended school? <i>If yes, continue asking:</i> What is the highest level of school you attended? What is the highest grade/form/year you completed at that level?	None <input type="checkbox"/> Primary school <input type="checkbox"/> Secondary school <input type="checkbox"/> Higher <input type="checkbox"/> Grade_ _ _ _
Infant/young children		
1. Child's name	What is your child's name?	
2. Child's sex	Is (<i>the name of the child</i>) male or female?	Male <input type="checkbox"/> Female <input type="checkbox"/>
3. Child's age	When is your child's birthday? <i>Probe if necessary:</i> On what day and in which month and year was (<i>name of the child</i>) born? Does he/she have a health/vaccination card with the birth date recorded? <i>If yes, record the date of birth as documented in the card</i> How old was (<i>name of the child</i>) at his/her last birthday? <i>Record age in completed years and/or months</i>	_ _ _ _ / _ _ / _ _ year month day Age in completed years_ _ _ _ Age in completed months_ _ _

Module 1: Feeding Infants (0 - 6 Months)

Explain to the participant:

I am going to ask you some questions about nutrition of infants from birth to six months old. Please let me know if you need me to clarify any of my questions. Feel free to ask any question you may have.

Practices**1 Question P.1: Breastfeeding**

Was (*name of the baby*) breastfed yesterday during the day or at night?

- Yes
 No
 Don't know/no answer

1 Question P.2: Feeding breastmilk

Sometimes babies are fed breastmilk in different ways, for example by spoon, cup or bottle, or are breastfed by another woman.

Did (*name of the baby*) consume breastmilk in any of these ways yesterday during the day or night?

- Yes
 No
 Don't know/no answer

1 Question P.3: Feeding breastmilk when the mother is absent

When you are not home or cannot feed the baby yourself, who does it?

-Father
-Grandmother
-Other children
-Other_____
-Don't know/no answer

If you are not there to feed the baby, what type of food is the baby fed?

-Breastmilk by spoon, cup or bottle
-Infant formula by spoon, cup or bottle
-Other liquids

1 Question P.4: Introducing liquids 1

Next I would like to ask you about some liquids that (*name of the baby*) may have had yesterday during the day or at night.

Did (*name of the baby*) have any of the following liquids? (*Read the list of liquids, starting with "plain water"*)

A. Plain water

-Yes
-No
-Don't know

B. Infant formula such as (*insert local examples*)

-Yes
-No
-Don't know

C. Milk, such as tinned, powdered or fresh animal milk

-Yes
-No
-Don't know

D. Juice or juice drinks

-Yes
-No
-Don't know

E. Clear broth

-Yes
-No
-Don't know

F. Yogurt

-Yes
-No
-Don't know

G. Thin porridge

-Yes
-No
-Don't know

H. Any other liquids such as (*list other water-based liquids available in the local setting*)

-Yes
-No

.....Don't know

I. Any other liquids

..... Yes

..... No

..... Don't know

Preliminary analysis

From questions P1, P2, P3 and P4 determine if the child is exclusively breastfed (*i.e.* fed exclusively with breastmilk)

Exclusively breastfed

Not exclusively breastfed

Knowledge

2 Question K.1: Breastmilk at birth

What is the first food a newborn baby should receive?

..... *Only breastmilk*

..... *Other*

..... *Don't know*

Preliminary analysis

Knows

Does not know

1 Question K.2: Meaning of exclusive breastfeeding

Have you heard about exclusive breastfeeding?

..... Yes

..... No → *continue to question K.3*

What does exclusive breastfeeding mean?

..... *Exclusive breastfeeding means that the infant gets only breastmilk and no other liquids or foods*

..... *Other*

..... *Don't know*

Preliminary analysis

Knows

Does not know

1 Question K.3: Recommended length of exclusive breastfeeding

How long should a baby receive nothing more than breastmilk?

Probe if necessary.

Until what age is it recommended that a mother feeds nothing more than breastmilk?

- *From birth to six months*
- *Other*
- *Don't know*

Preliminary analysis

- Knows
- Does not know

2 Question K.4: Breastmilk is sufficient for babies from birth to six months old

Why do you think breastmilk is the only food recommended for infants up to six months old?

Probe if necessary.

Why is breastmilk alone sufficient to feed babies during the first six months?

- *Because breastmilk provides all the nutrients and liquids a baby needs in its first six months*
- *Because babies cannot digest other foods before they are six months old*
- *Other*
- *Don't know*

Preliminary analysis

- Knows
- Does not know

1 Question K.5: Frequency of feeding

How often should a baby younger than six months be breastfed or fed with breastmilk?

- *On demand, whenever the baby wants*
- *Other*
- *Don't know*

Preliminary analysis

- Knows
- Does not know

2 Question K.6: Benefits of exclusive breastfeeding for babies

What are the benefits for a baby if he or she receives only breastmilk during the first six months of life?

- *He/she grows healthily*
- *Protection from diarrhoea and other infections*
- *Protection against obesity and chronic diseases in adulthood*
- *Protection against other diseases. Specify _____*

- *Other*
- *Don't know*

Preliminary analysis Knows Does not know

Number of correct responses _____

3 Question K.7: Benefits of exclusive breastfeeding for mothers

What are the physical or health benefits for a mother if she exclusively breastfeeds her baby?

Probe if necessary:

- *Delays fertility*
- *Helps her lose the weight she gained during pregnancy*
- *Lowers risk of cancer (breast and ovarian)*
- *Lowers risk of losing blood after giving birth (less risk of post-partum haemorrhage)*
- *Improves the relationship between the mother and baby*
- *Other*
- *Don't know*

Preliminary analysis Knows Does not know

Number of correct responses _____

2 Question K.8: Maintaining breastmilk supply

Many times, mothers complain about not having enough breastmilk to feed their babies.

Please tell me different ways a mother can keep up her milk supply.

- *Breastfeeding exclusively on demand*
- *Manually expressing breastmilk*
- *Having a good nutrition/eating well/having a healthy or diversified diet*
- *Drink enough liquids during the day*
- *Other*
- *Don't know*

Preliminary analysis Knows Does not know

Number of correct responses _____

2 Question K.9: Overcoming barriers to breastfeeding

Many mothers need to work and are separated from their baby. In this situation, how could a mother continue feeding her baby exclusively with breastmilk?

By:

- *Expressing breastmilk by hand, storing it and asking someone to give breastmilk to the baby*
- *Other*
- *Don't know*

Preliminary analysis

- Knows
- Does not know

3 Question K.10: Seeking health care if breastfeeding difficulties arise

If a mother has difficulties feeding breastmilk what should she do to overcome them?

Probe if necessary.

Who can help the mother to solve the problem?

- *Seek professional help from health-care services: doctors, nurses, midwives or other health professionals*
- *Other*
- *Don't know*

Preliminary analysis

- Knows
- Does not know

Module 2: Feeding Young Children (6 - 23 Months)

Explain to the participant.

I am going to ask you some questions about nutrition of infants aged from 6 to 23 months. Please let me know if you need me to clarify any of my questions. Feel free to ask any question you may have.

Season:

- Low food season
- High food season

Practices

1 Question P.1: Continued breastfeeding

Was (*name of the baby*) breastfed or did he or she consume breastmilk yesterday during the day or at night?

- Yes
- No
- Don't know/no answer

3 Question P.2: Dietary diversity

Now I would like to ask you about (other) liquids or foods that (*name of the baby*) ate yesterday during the day or at night. I am interested in whether your child had the item even if it was combined with other foods.

For example, if (*name of the baby*) ate a millet porridge made with a mixed vegetable sauce, you should reply yes to any food I ask about that was an ingredient in the porridge or sauce.

Please do not include any food used in a small amount for seasoning or condiments (like chillies, spices, herbs or fish powder); I will ask you about those foods separately.

Yesterday during the day or at night, did (*name of the baby*) eat:

(*Read the food lists. Underline the corresponding foods consumed and tick the column Yes or No depending on whether any food item of the list was consumed. Record the number of times when relevant (Group 3).*)

<i>Group</i>	Food lists	No	Yes
Group 1: <i>Grains, roots and tubers</i>	Porridge, bread, rice, noodles or other foods made from grains		
	White potatoes, white yams, manioc, cassava or any other foods made from roots		
Group 2: <i>Legumes and nuts</i>	Any foods made from beans, peas, lentils, nuts or seeds		
Group 3: <i>Dairy products</i>	Infant formula, such as [insert local examples]		How many times? _ _ _
	Milk, such as tinned, powdered or fresh animal milk		How many times? _ _ _
	Yogurt or drinking yogurt		How many times? _ _ _
	Cheese or other dairy products		
Group 4: <i>Flesh foods</i>	Liver, kidney, heart or other organ meats		
	Any meat, such as beef, pork, lamb, goat, chicken or duck		
	Fresh or dried fish, shellfish or seafood		
	Grubs, snails or insects		
Group 5: <i>Eggs</i>	Eggs		
Group 6: <i>Vitamin A fruits and vegetables</i>	Pumpkin, carrots, squash or sweet potatoes that are yellow or orange inside		
	Any dark green vegetables [insert local examples]		
	Ripe mangoes (fresh or dried [not green]), ripe papayas (fresh or dried), musk melon [insert other local vitamin-A-rich fruits]		
	Foods made with red palm oil, red palm nut or red palm nut pulp sauce		
Group 7: <i>Other fruits and vegetables</i>	Any other fruits or vegetables		
Others (<i>not counted in the dietary diversity score</i>)	Any oil, fats, or butter or foods made with any of these		
	Any sugary foods, such as chocolates, sweets, candies, pastries, cakes or biscuits		
	Condiments for flavour, such as chillies, spices, herbs or fish powder		

.....The baby does not consume any food other than breastmilk

Preliminary analysis

Number of food groups consumed the previous day ____/7

1 Question P.3: Minimum meal frequency

How many times did (*name of the baby*) eat foods, that is meals and snacks other than liquids yesterday during the day or at night?

Number of times |__||__|

Don't know/no answer

Preliminary analysis (to do after the interview)

WHO (2008) recommendations for minimum meal frequency:

For breastfed children:

- 2 - 3 times for breastfed infants 6 - 8 months
- 3 - 4 times for breastfed infants 9 - 23 months

For non breastfed children:

- 4 times for non breast-fed children 6 - 24 months (including milk feeds, identified in question P2, Group 3)

From questions P.1, P.2 and P.3, determine if the child receives food the minimum number of times according to WHO recommendations:

- Less than recommended
- The minimum number of times each day (follows the recommendation)
- More than recommended

Knowledge

2 Question K.1: Continued breastfeeding

How long is it recommended that a woman breastfeeds her child?

Probe if necessary:

Until what age is it recommended that a mother continues breastfeeding?

-*Six months or less*
-*6 - 11 months*
-*12 - 23 months*
-*24 months and more (correct response)*
-*Other*
-*Don't know*

Preliminary analysis

- Knows
- Does not know

1 Question K.2: Age of start of complementary foods

At what age should babies start eating foods in addition to breastmilk?

-*At six months*
-*Other*
-*Don't know*

Preliminary analysis

- Knows
 Does not know

2 Question K.3: Reason for giving complementary foods at six months

Why is it important to give foods in addition to breastmilk to babies from the age of six months?

-*Breastmilk alone is not sufficient (enough)/cannot supply all the nutrients needed for growth/from six months, baby needs more food in addition to breastmilk*
-*Other*
-*Don't know*

Preliminary analysis

- Knows
 Does not know

1 Question K.4: Consistency of meals

Please look at these two pictures of porridges. Which one do you think should be given to a young child?

(Show the images/pictures of thick and watery/thin porridges and tick one of the options here below depending on the respondent answer.)

-*Shows the thick porridge*
-*Shows the watery*
-*Does not know*

Preliminary analysis

- Knows
 Does not know

Support material: porridges

1.



2.



2 Question K.5: Reason for consistency of meals

Why did you pick that picture?

-Because the first porridge is thicker than the other
-Because the thick porridge is more nutritious/because it is prepared with different types of foods or ingredients (food diversity)
-Other
-Don't know

Preliminary analysis

- Knows
- Does not know

1 Question K.6: Dietary diversity and ways of enriching porridge

To feed their children, many mothers give them rice porridge or borbor.

Please tell me some ways to make rice porridge more nutritious or better for your baby's health.

Probe if necessary:

Which foods or types of food can be added to rice porridge make it more nutritious?

By adding:

-Animal-source foods (meat, poultry, fish, liver/organ meat, eggs, etc.)
-Pulses and nuts: flours of groundnut and other legumes (peas, beans, lentils, etc.), sunflower seed, peanuts, soybeans
-Vitamin-A-rich fruits and vegetables (carrot, orange-fleshed

- *sweet potato, yellow pumpkin, mango, papaya, etc.)*
- *Green leafy vegetables (e.g. spinach)*
- *Energy-rich foods (e.g. oil, butter/ghee)*
- *Other*
- *Don't know*

Preliminary analysis <input type="checkbox"/> Knows <input type="checkbox"/> Does not know

3 Question K.7: Responsive feeding

Do you know any ways to encourage young children to eat?

- *Giving them attention during meals, talk to them, make meal times happy times*
- *clap hands*
- *make funny faces/play/laugh*
- *demonstrate opening your own mouth very wide/modelling how to eat*
- *say encouraging words*
- *draw the child's attention*
- *Other*
- *Don't know*

Preliminary analysis <input type="checkbox"/> Knows <input type="checkbox"/> Does not know

Thank you very much for your participation