Micronutriments, Santé de la mère et de l'enfant III (MISAME III)

Testing the impact of nutritional supplements for women in pregnancy in Burkina Faso.

Phase 2 findings report – Burkina Faso

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Introduction

Background

Although Burkina Faso has seen significant improvements in maternal and infant health over the last 25 years, the infant mortality rate remains high at 53 per 1000 live births in 2016 (Hug, Sharrow and You 2017). Low birth weight is a significant risk factor for neonatal death, estimated to account directly or indirectly for 60-80% of neonatal deaths worldwide (Katz et al. 2014). According to the 2010 Burkina Faso Demographic Health Survey (DHS), 13.1% of babies were estimated by their mothers to have been either 'very small' or 'smaller than average' at birth (INSD and ICF Intl. 2012). Of those with a reported birth weight (63.6% of all births), 13.9% were less than 2.5 kg (INSD and ICF Intl. 2012). The number of infants who are small for gestational age (SGA) – those with a birth weight below the 10th percentile for gestational age – is more difficult to assess, as it is dependent on accurate reporting of gestational age at birth, which is often unavailable in resource-challenged settings. Studies in the Houndé district of Tuy Province, the location of the *Micronutriments, Santé de la mère et de l'enfant III* (MISAME-III) study, found levels of SGA at 35% and 29% (Roberfroid et al. 2008, Huybregts et al. 2009).

Poor nutrition, including energy and micronutrient deficiencies, is known to contribute to poor birth outcomes (Gernand et al. 2016, da Silva Lopes et al. 2017, Fall et al. 2009). Women who enter pregnancy with low Body Mass Index (BMI) or short stature are at increased risk of adverse health outcomes (Rahman et al. 2015) as well as SGA births (Kozuki et al. 2009). According to the 2010 Burkina Faso DHS, 15.7% of all women in the country are underweight, with BMI less than 18.5 kg/m^2. Rural women are more than twice as likely as urban women to be underweight (18.7% and 7.8% respectively).

Women's micronutrient needs increase during pregnancy to meet the needs of the growing foetus, and multiple rather than single micronutrient deficiencies affect women of reproductive age, particularly in low-income countries (Christian 2010). The 2010 DHS reports that 49% of women, and 58% of pregnant women, are anaemic to some degree (INSD and ICF Intl. 2012). A survey conducted among women in Ouagadougou in 2006 as part of the Food and Nutrition Technical Assistance (FANTA) project's Women's Dietary Diversity Project (WDDP) found multiple micronutrient deficiencies (Becquey, Capon and Martin-Prével 2009). A subsequent analysis of the WDDP datasets found that the customary diet was inadequate to meet the micronutrient needs of Burkinabé women (Arimond et al. 2017). In 2009, another study concluded that women in Houndé were deficient in nine of the eleven nutrients studied, all except phosphorus and zinc (Huybregts et al. 2009).

Current World Health Organization (WHO) antenatal care guidelines recommend provision of balanced energy-protein (BEP) supplements in populations where the prevalence of undernourished pregnant women (low BMI) is greater than 20% (WHO 2017). They also recommend provision of iron folic acid (IFA) supplements to all pregnant women (WHO 2016) but further note that some countries may decide to switch to the provision of multi-micronutrient (MMN) instead of IFA supplements. This is particularly the case where multiple deficiencies are the rule rather than the exception, as MMN supplements have been shown to result in better birth outcomes than IFA alone (Haider and Bhutto 2017). However, since the WHO antenatal care guidelines mention this as an option, rather than a recommendation, use of MMN instead of IFA supplements is not yet widespread. The Bill and Melinda Gates Foundation (BMGF) convened a consultation to discuss the content and possible forms of BEP supplements; the outcome was the recommended distribution of fortified BEP supplements and proposed macro- and micronutrient content for these food supplements.

The prevalence of underweight in women of reproductive age in Burkina Faso is 15.7%, although prevalence rises as high as 31.1% in some regions. The prevalence of underweight among 15- to 19-year-olds is 23.5% (INSD and ICF Intl. 2017).

Aims and objectives of research

BMGF commissioned the three-phase research study '*Micronutriments, Santé de la mère et de l'enfant III* (MISAME III)*: Concevoir et tester l'impact d'un complément alimentaire nutritif pendant la grossesse afin d'en améliorer l'issue au Burkina Faso'*. The overall study seeks to evaluate the preferred product type for the provision of fortified BEP supplements and its impact on pregnancy outcomes. In Phase 1, 12 products of different types and flavours were rapidly assessed in terms of short-term acceptability and two products, Plumpy'Mum and the Vanilla biscuit were selected for inclusion in Phase 2. During Phase 2, these two most acceptable BEP supplements were tested for longer-term acceptability and home consumption for a period of ten weeks (four weeks per product and two weeks of product choice). The BEP supplement selected from this formative research will then be administered to pregnant women in Phase 3, a randomized controlled trial (RCT) designed to test the efficacy of the BEP supplement during pregnancy and lactation on pregnancy and child health outcomes. The nutritional composition of the specific BEP supplements was established during an expert consultation convened at the BMGF in September 2016. The form of BEP supplements selected for Phase 3 may be modified, if necessary, according to the preferences of the target population. The research partners, including BMGF, have liaised with private sector partners to request supplements in the selected forms with the recommended nutrient composition for the formative research in phases 1 and 2.

Report structure and outputs

This draft report synthesises findings from Phase 2 of the formative research study. The data collected comprised a number of related components: a quantitative survey, home observation, food frequency questionnaire and qualitative data collection (in-depth interviews and focus group discussions) using open and inductive methods. Adopting a mixed methods approach allowed for triangulation of material and for increased validity of findings. The study was able to provide insight to inform the selection of two products for Phase 3 of the project.

Following the introduction, the study's methods are outlined in detail. The subsequent three chapters present: (1) justification for Phase 3 supplement choice; (2) summary of findings and; (3) direction for Phase 3 product choice.

The report was compiled by Ghent University (quantitative analysis) and Anthrologica (qualitative analysis) and prior to its finalisation, all colleagues had the opportunity to provide written and verbal feedback, which was incorporated into the final report as appropriate. The report is structured to be of operational use in Phase 3 of the MISAME III project.

Methodology

The research was conducted in line with prevailing ethical standards that seek to protect the rights and welfare of all participants (Graham et al. 2013). Ethical permission to undertake the study was granted by Ghent University Ethics Board, the *Comité d'éthique institutionnel du Centre Muraz* in Burkina Faso and the Harvard T.H. Chan School of Public Health Institutional Review Board. The research was a collaboration between the Department of Food Safety and Food Quality, Ghent University, and the Harvard T.H. Chan School of Public Health working with Anthrologica. Phase 2 of the formative research study ran from November 2018 to April 2019, including a period of intensive data collection and transcription of the in-depth interviews and focus group in Burkina Faso in December 2018-March 2019.

Research team

The overall research for Phase 2 was managed by Sheila Isanaka (SI) and Saskia de Pee (SdP) from Harvard, and Juliet Bedford (JB), Leslie Jones (LJ) and Katie Moore (KM) from Anthrologica. The Ghent University team was led by Patrick Kolsteren (PK) and Carl Lachat (CL) with support from Katrien Vanslambrouck (KV), Brenda de Kok (BdK) and Laeticia Toe (LT).

With technical oversight from the core team, LJ and KM led the qualitative research. They developed the qualitative research tools, analysed the qualitative data, synthesised it with the quantitative analysis, and drafted qualitative components of the Phase 2 report.

The quantitative tools were designed by SI and the Ghent University team with input from the core team. Ghent University collaborated with the national research organisation AFRICSanté to conduct in-country data collection, transcription and translation. Their 21-person research team was led by Moctar Ouédraogo (MO) and included 20 data collectors (6 interviewers, 8 home observers and 6 community workers) and one data manager, Henri Somé. Additional support and supervision was provided by AFRICSanté Executive Director Rasmané Ganaba. LJ, KM, BdK, KV and LT provided training to the data collectors in Burkina Faso and BdK, KV and LT also supported the research team in the field. The analysis of quantitative data was undertaken by Ghent University and SI.

Study sites

Data were collected at two health centres (Boni and Kari) in Houndé, the district capital of the province of Tuy in the Hauts-Bassins region of Burkina Faso. The province of Tuy is characterised by its cereal production, and a major cotton fibre production plant has been established at the centre of Houndè. The research site was selected by AFRICSanté in collaboration with Ghent University as both had conducted previous research in the locale which had been well accepted by the local community.

The district has one district hospital and 31 health centres. Seven health centres were identified for potential inclusion in the study, of which five were selected for Phase 1 on the basis that the facility catchment areas were easily accessible throughout the year, regardless of seasonal variations. The five centres were: *Centres de Santé et de Promotion Sociale* (CSPS) [Health and Social Promotion Centre] at Bouéré; CSPS Boni; CSPS Karaba; CSPS Kari and CSPS Dougoumatato II.[1]

[1] CSPS Bouéré has been excluded from Phase 3 due to difficulty reaching it during the rainy season.

Participants and sampling

The officers-in-charge of the two health facilities worked with the research team to identify pregnant women in the catchment areas to be included in the research. Pregnant women aged between 15 and 40 years and of varying gestational age were invited to participate. Exclusion criteria focused on food allergies (to soy, dairy products, eggs, gluten and nuts) but no other socio-demographic or marital characteristics due to the homogeneity of the context. All pregnant women who participated were recruited through service delivery points during the December-March data collection.

Eighty women were recruited for a 10-week cycle of product testing during which they sampled each product for four weeks and were then offered a choice of products for the final two weeks of the 10-week period. Both the Plumpy'Mum and the Vanilla biscuit were produced by Nutriset. The product's nutrient content was fully (or almost) in line with the guidance for composition of fortified BEP supplements from the Gates Foundation. Further development may be needed on the chosen supplement for Phase 3.

In total, 6390 data collection activities were conducted. The following activities were conducted with 80 pregnant women (40 in Boni CSPS and 40 in Kari CSPS) : 4480 Daily Consumption Forms (56 per participant during the first 8 weeks), 1120 Daily Distribution Forms (14 per participant during the last 2 weeks), 240 Product Acceptability Form (PAF) questionnaires (three per participant); 240 Food Frequency Questionaire (FFQ) (three per participant); 40 Home Observations (two observations for 20 participants); 240 in-depth interviews (three per participant); and six focus group discussions (eight participants per group discussion). Twenty-four in-depth interviews were conducted with other stakeholders: family members, health workers and community leaders.

Justification for Phase 3 supplement choice

Decision criteria for Phase 3 choice

The Ghent team proposed five criteria for selection of the supplement to be used in Phase 3: compliance, sharing, product preference, product characteristics, and production/packaging/price. The data related to these criteria are outlined below.

Compliance

- Both Plumpy'Mum (99.8%) and Vanilla biscuit (99.6%) had a high compliance in the first 8 weeks, as defined by the daily consumption of supplements by the participants.
- Qualitative data confirm high compliance. Nearly all women reported consuming the products daily during the study, except for small number in both the focus group discussions (FGDs) and in-depth interviews who were unable to tolerate one or the other of them.

Sharing

- Qualitative data show no notable difference in sharing practices between the two products.

Product Preference

- The quantitative data indicated an overall preference for Vanilla biscuit as well as during the choice weeks (9 and 10):
  - The overall preference for Plumpy'Mum was 415/1120 (37%)[2]
  - Overall preference for the Vanilla biscuit was: 705/1120 (63%)
  - In the choice weeks there was ≥ 10/14 times choice for Plumpy'Mum: 24 (30%) and ≥ 10/14 times choice for Vanilla biscuit: 44 (55%)

- Final in-depth interviews (conducted in week 10) highlighted a majority preference for the Vanilla biscuits, with the Plumpy'Mum and the option for choice scoring similarly amongst the remaining participants.

- Focus group discussions highlighted a greater overall preference for the Vanilla biscuit. When asked which product they liked better women's opinions were divided as follows :
  - Vanilla biscuit: 30 (67%)
  - Plumpy'Mum: 15 (33%)

Product characteristics

- Nutrient composition: this was found to be equal for both supplements.
- The stability: Plumpy'Mum remains stable; however, the long-term stability of the Vanilla biscuit is uncertain. For the efficacy trial, stability is the most important aspect because of its aim (BMGF).
- Shelf life: Plumpy'Mum has a shelf life of 18 months while the Vanilla biscuit will can only survive for 6 months.
- Flavour options: different flavour variations will be available for both supplements.
- Safety: in order to ensure the safety of the Plumpy'Mum the lactose content will be lowered from 12g to 6g by Nutriset.

[2] Each of 80 women had the opportunity to choose daily during the 2-week choice period: 80 women * 14 choice events = 1120.

Production, packaging and price

- Production: Plumpy'Mum has an option for local production; options for Vanilla biscuits are unknown.
- Packaging: The Plumpy'Mum is packaged in a non-recyclable aluminium and plastic wrapping. It is understood that the Vanilla biscuits will be packaged in a number of plastics.
- Price: Production of the Plumpy'Mum is less expensive than the estimated production costs for the Vanilla biscuits, resulting in potentially lower costs for women who may use the product in the future.

Final choice: Plumpy'Mum

Nutriset, the producer of the BEP supplements, has given the research team an update on the technical development of the products that influences the final decision for Phase 3. For the Vanilla biscuits, the product sheets will be available in June/July 2019 with information on the stability (oxidation of vitamins and guarantee for shelf life), which creates an extra uncertainty for the production timeline. Since the MISAME team is aiming to start the clinical trial as soon as possible, with the aim to test the efficacy of a BEP supplement, it was decided to continue with Plumpy'Mum. The production timeline of this BEP supplement is more in line with the project timeline and it is guaranteed that the vitamins and minerals in the product will be maintained. Given the results presented in this report, we can conclude that Plumpy'Mum is well accepted for the clinical trial.

Summary of findings

This section highlights findings related to product utilisation during the study and customary diet of study participants and the community more broadly. Demographic data regarding study participants is set forth in Table 1, contained in the Annex to this report.

Product utilisation during study

Adherence / compliance

- Quantitative data indicate a high adherence to both products.
  - Adherence rates were 99,8% for Plumpy'Mum and 99,6% for the Vanilla biscuit during the first 8 weeks.
  - During the choice weeks (9 and 10), adherence increased to 100% for Plumpy'Mum and 99.9% for the Vanilla biscuit.
- There was a high consumption of both supplements in their totality (full portion) by the participants.
  - Plumpy'Mum was consumed in its totality in 95.8% of the cases; Vanilla Biscuit in 99.6% during the first 8 weeks.
  - Plumpy'Mum was consumed in its totality in 99.8% of the cases; Vanilla Biscuit in 100% during week 9 and 10.
- Qualitative findings confirm that most women ate each product every day. Women reported eating at least part of the supplement daily and only in a small number of cases were days of intake missed completely. A small number of women said that they were unable to eat Plumpy'Mum because they didn't like it or couldn't tolerate it.
- Women in focus groups also reported finishing the products on most days, with a small number unable to eat the full portion of Plumpy'Mum because of aversion to it. A small number of women in the focus group discussions and in-depth interviews recalled being unable to finish the Vanilla biscuit every day.

Preference

- A series of questions was asked regarding participants' opinions of various aspects of the products, including questions related to hedonic characteristics and product usage and storage. Possible responses were on a Likert scale of 1 to 7, with 1=dislike very much/disagree strongly and 7= like very much/agree strongly. A summary of responses to those questions is presented in Table 2, contained in the annex to this report.
- Overall, the Vanilla biscuit received a mean Likert score of 7, and the Plumpy'Mum received a mean Likert score of 6.
- There was a higher preference for Vanilla biscuit when participants are given a choice during week 9 and 10 (total of 14 days).
  - Plumpy'Mum was 415 times (37%) consumed; the Vanilla biscuit 705 times (63%)
  - 24 (30%) women out of the 80 participants asked 10 times or more for a daily consumption with Plumpy'Mum; 44 (55%) women asked 10 times or more for a daily consumption with the Vanilla biscuit.
- Final interviews highlighted a mixed response to women's product preference for future utilisation. While the preferred product amongst women was the Vanilla biscuit, a large number of participants indicated a desire for choice (see 'Pattern of Choice,' below).
- There was a preference for the Vanilla biscuits when focus group participants are asked what product they like best of the two: 30 (67%) chose the Vanilla biscuits and 15 (33%) chose the Plumpy'Mum.[3]

[3] In FGDA (Kari), 5 women preferred the Vanilla biscuit vs. 3 who preferred the Plumpy Mum. However, when asked what product they would choose if they could only eat one in the future, 6 chose the Vanilla biscuit vs. 2 for Plumpy Mum.

Pattern of choice

- On average, the 80 participants asked 1.9 times to change supplement during weeks 9 and 10. The number of times a change was requested ranged from 0 to 12. The 25th percentile for this was no change requested, the 50th percentile was 1 change requested and the 75th was 2 changes requested. See Table 3, contained in the Annex to this report.
- It was indicated in in-depth interviews that choice was an important factor for a number of women in discussions about future utilisation. Reasons cited for why women preferred to have a choice included: their desire for variety, their ability to change product depending on what they wanted on a given day or week, and their perception that having choice would improve their consumption of the product.
- In focus groups, however, there was no strong interest expressed in having a choice between the two products.
- Asked about flavour variations during focus groups, it was found that there was not a strong interest expressed in having additional flavours of the products.

General aspects on the use of the supplement

- The supplements were most often consumed in the morning (before 12pm).
  - 64.3% of the supplements were consumed in the morning during the first 8 weeks.
  - 65.9% of the supplements were consumed in the morning during the last 2 weeks.
- Women generally reported eating the supplement before breakfast or between other meals.
- The supplements were most often consumed as a snack:
  - 60% of the supplements were consumed as a snack, 19% as part of a meal,12% as a meal and 9% as part of a snack during the first 8 weeks.
  - 66% of the supplements were consumed as a snack, 15% as part of a meal, 11 % as a meal and 8% as part of a snack during the last 2 weeks.
- The qualitative data indicate that the supplement was consumed both in a single sitting and in multiple sittings throughout the day, depending on personal preference, hunger, and ability to tolerate the product at a specific time.

Customary diet

Customary Meal patterns

- Diet consists of mainly of tô (stiff porridge), bouillie (porridge) or couscous made from maize with vegetable sauce (green leafy vegetables and other vegetables) and condiments/seasonings. Food groups less frequently consumed: eggs, vitamin-A rich vegetables, roots and tubers, vitamin-A rich fruits, milk (products). Qualitative data confirmed these aspects of the diet and emphasised that frequency of eating fruits, vegetables and protein-rich foods was dependent on financial means, availability and seasonality.
- There was broad agreement that people in the community eat their fill at meals, although it was acknowledged that at times this was not always possible due to financial constraints or the availability of desired foods.
- The meal patterns reported in the quantitative data indicated that most women ate breakfast, lunch and dinner.
- Qualitative data confirmed that most families eat three meals per day, though a minority eat only two meals per day, either breakfast and dinner or lunch and dinner. Where women ate less, reasons were not clear but appeared to be related to their means or levels of hunger rather than to the fact they were pregnant.

Snacking and substitution

- Data are somewhat inconsistent regarding snack consumption. The quantitative data from food frequency questionnaires indicate that only 19% of pregnant women ate a snack (food between meals) every day and 16% never consumed a snack in the previous month.

- Qualitative data indicate more widespread snacking practices in the community in general, although not necessarily on a daily basis. As with the diet in general, snacking frequency is means-dependent. The following report from one participant in Boni was consistent; '*Snacks, if you have them you consume them. Or when you have the means you can buy them, if you desire'.*
- Women indicated in in-depth interviews that snacking practices were ad hoc and inconsistent rather than a routine practise. Some women reported snacking only a few times in a week but for others snacking was dependent on financial means. The market was frequently cited as the place to purchase snacks; one woman affirmed, *'if you see something you want at the market, you buy it and you eat it'.*
- Foods and drinks most commonly snacked on included fruits (often, available wild fruits), stored peanuts, sesame, cakes and biscuits, and other purchased foods, depending on means.
- Pregnant women may also snack on leftovers from meals. The in-home observations confirm that many women eat more than three times in a day. Table 4, contained in the Annex to this report, provides additional quantitative data regarding food-related activities recorded during the in-home observations.
- There was no clear sign of substitution effect for snacks from the quantitative data. The intake for snacks in both randomisation group 1 and 2 (no cross-over effect observed) was not meaningfully decreased compared to baseline. This can suggest that the supplements were consumed in addition to the regular diet (incl. snacks) and did not replace other snacks the women consumed.
- Pregnant women and other stakeholders reported that the products were generally a supplement to their normal diet and did not replace all or part of a meal, though some stated that they were too full to eat their normal meals following consumption of the products.
- In focus group discussions, several women said that the products increased their appetites.

<u>Iron Folic Acid (IFA) Tablets</u>

- Intake of IFA tablets: 69/80 women used IFA tablets in the last month.

Focus for analysis and direction for Phase 3 product choice

The Ghent team identified a number of specific focus areas for analysis, in order to inform Phase 3 of the study. These areas included dietary customs and practices, sharing, desired information and communications channels, preferred distribution methods, family expectations, barriers and facilitators to product use and how to engage stakeholders to support use, and how practices regarding the announcement of pregnancy might affect early access to the supplements. The following sections discuss the qualitative data related to these focus areas.

Dietary customs and practices

Decision-making and serving preferences around meals and snacks

- Most women and stakeholders[4] report that the women generally decide what to prepare and how it is distributed among family members.
- Others said that either the husband, the mother-in-law or the head of household decides. Some said that, regarding food distribution, no one decides who receives what amount of food: there is plenty of food for all and everyone takes what they want.
- Responses were to the same effect when stakeholders were asked specifically about decision-making around pregnant women's diets; some said the husband/head of household decides and others said the pregnant woman herself decides.
- The head of household is most frequently served first at meals, although children or pregnant women may in some families be served first, particularly if they are hungry. A small minority of women reported no specific serving pattern, suggesting that mealtimes and the serving of meals was informal. One woman in Kari explained, *'we eat all together, at the same time…We share, we eat'.*
- Order of serving does not clearly correspond to portion sizes. Most stakeholders reported that household members eat their fill, though some reported that the head of household/husband receives the most food at meals and that women receive the least.

Diet during pregnancy and lactation

- All stakeholders uniformly recognised the importance of a healthy diet for the well-being of the pregnant woman and her unborn child. It was suggested that the woman should eat well and in sufficient quantities so that she and the foetus are in good health. In Boni, one woman suggested, *'for pregnant women the importance is to eat enough. She must not go hungry. The child who is in her belly eats too. The woman also needs food, she must not be hungry, it's not good'.* Another in Kari agreed, *'in my opinion anyway, the feeding of a pregnant woman is important. When you're pregnant you have to eat well to have strength so that in childbirth you do not get tired. And so when the child also comes out, he has the strength'.*
- Most stakeholders reported that there are no specific foods eaten during pregnancy but recognized the importance of a nutrient-rich, varied diet.
- A small number believed that soft drinks like Sprite and Fanta are good for pregnant women, while others included those among the foods that women should not eat or drink.
- Most stakeholders believed that women should increase the quantity of food they eat during pregnancy and lactation. Other than increased food quantity, most stakeholders said there was no difference between the household diet and that of a pregnant woman in the household, nor any difference between a pregnant woman's diet and a lactating woman's diet.
- Intentional reduction of dietary intake during pregnancy is not widespread in this population. A small number of women suggested that food intake diminished during pregnancy and related this to the fact that they felt fuller more quickly or that they were experiencing symptoms of nausea. It did not appear

[4] Stakeholders who participated in in-depth interviews were family members, health professionals and community leaders.

that women intentionally diminished or restricted food intake. The majority of other women indicated that they did not try to limit their diets and this was corroborated by other stakeholders.

- A few stakeholders noted that traditionally, women did try to limit their diets during pregnancy, and that there remained some individuals who believed that eating a lot during pregnancy would lead to a larger baby and a difficult delivery; however, that belief did not appear to be widespread. Certain foods were identified as being avoided or encouraged during pregnancy and lactation. For example, it was said that women who have newly delivered should eat hot foods; should avoid haricots and meat that has not been dried; and should eat millet and peanuts because they increase milk production.
- Findings from in-depth interviews also suggested that the intake of hot foods was especially important during lactation, with women more frequently highlighting the importance and benefits of consuming hot foods for milk production.
- Health care professionals provide general dietary advice to pregnant women during the course of their CSPS (centres de santé et de promotion sociale) visits as do ASBCs (agents de santé à base communautaire) at the community level. Women are counselled to eat well and in sufficient quantities. Some health care providers noted that there may be varying degrees of understanding of the advice provided, and varying ability to follow it, depending on household means and the support of the husband or other wives. Others stated that dietary advice is not provided in any systematic manner and that no set of concrete recommendations has been developed for them to furnish to pregnant women.
- Lack of means to provide a varied, high quality diet and lack of access to a variety of foods were identified as principal nutrition challenges for pregnant women.

<u>Dietary Customs and Traditions</u>

- Few stakeholders reported widely-followed dietary taboos during pregnancy, and none would appear to influence at-home supplement use. It was reported that some individuals believe that eating eggs or chicken during pregnancy will cause the child to be a thief. Others said some community members believe that other foods may have ill effects for the pregnancy and/or developing foetus, including mangoes and honey.
- More generally, there were a small number of dietary prohibitions that are followed in the community, with the most common being avoidance of boa (an indigenous snake) and other bush meats.

Aspects to optimise Phase 3 trial

<u>Information on sharing</u>

- Sharing practices during study
  - In in-depth interviews and focus group discussions, women reported very limited sharing of the product; any sharing was primarily with their children. The following reports were consistent across study sites, '*No, I didn't share with anyone. Someone who is not pregnant can not consume this because it's for pregnant women*' (Pregnant woman, Kari), '*No, I did not share with anyone. It was me alone who ate the product'.*
  - Family members confirmed that most of the women did not share the product.
  - Women reported that they had been advised at the onset of the study that the supplement was to be taken by pregnant women only and as such they appeared to adhere to the directions given, as one woman in Kari highlighted *'I never gave any* [of the product] *to anyone, because you* [the research team] *told us not to share and that the product is only for one person'.*

- Acceptability of instruction not to share/expectation to share
  - Nearly all participants and stakeholders agreed that household members and others accepted the instruction not to share as long as they understood it. A community leader stated, '*For those who understand these things, they will understand that it's made for pregnant women. But for those*

who don't understand anything, if the woman says that it's only for her alone, they will say that it's meanness'.

- Stakeholders emphasised the importance of sensitising household members and the community so that all understand the product is to be used only by pregnant women
- Some noted that children might still expect to share.
- The home observations confirmed that women often ate the product alone and almost no sharing was reported.

- Future sharing
  - In focus groups, most participants said they would not share in the future, even with their children, if they were instructed not to do so.
  - Several participants expressed understanding that if they shared they would not receive the full benefits of the products.
  - Several said that they would share it with their infant while they are breastfeeding.
  - Nearly all women in focus group discussions reported that they alone could decide whether to share; only one reported that her husband could influence her decision but said that she would still abide by the study's instructions not to share.
  - Stakeholders had mixed expectations regarding whether the pregnant women would share with others in the future. Several said that it was likely that women would share with their children, and one gave the example of the Plumpy'Mum given to children in the community, which is often shared despite instructions to the contrary.

- Strategies to avoid sharing
  - Pregnant women in the study suggested that in order to avoid requests to share, particularly from children, it was best to consume the product alone, out of the sight of others (either after others had left the home, or by moving to another room to eat).
  - Some of those with the means to do so said that they would buy the children an alternative snack in order to avoid sharing.
  - Pregnant women also suggested that sensitisation – telling children, family and community members that the product is a medicine designed uniquely for pregnant women – would help minimize requests to share. In one focus group discussion in Boni, one woman reported that *'I explained to my children that it is a supplement for pregnant women and that children should not touch it. My husband also knows that it's a medicine so in my house nobody touched it* [the supplement] *or bothered me.'*

<u>Expectations regarding future use of the product</u>

- Continued use of products during this pregnancy/while breastfeeding
  - Most women stated an intention to continue to use the products until 6 months after birth. A small number said that they would stop using them or would use them at reduced intervals once they had given birth.
  - Family members indicated that they would support continued use of the products by the pregnant women in their families.

- Use of products in future pregnancies
  - A large majority of participants said that they would use the product daily in future pregnancies if it were given for free, because of its benefits for them and their babies.
  - Stakeholders were also of the opinion that most women would eat the product in a future pregnancy because it's good for them, is recommended by health workers, will contribute to a healthy pregnancy and makes them strong.

- Most stakeholders believed that the women would take the product as a supplement, not as a replacement for some/all of a meal, and that they would not share it.

- If there were to be a charge for the product, reactions are more varied with the predominant view being that women and families that could afford the product would buy it for their pregnant women. Some families, however, might not do so, because they may not understand the benefits or because they are used to receiving the products and other supplements for women without paying.
- There was great variability in the price it was estimated people would be willing to pay if the product were not free. The prices ranged from 1 F to 5000F. In most cases, no unit was given for the price – i.e., it was not specified whether the price was per sachet, per week or per month. The FAP showed that most women (59-73%) were willing to pay between 0-100 CFA for the supplements (Table 2).

Messaging and strategies to increase usage/compliance

- Pregnant women and others suggested that it was important to emphasise the positive aspects of the products – that they are good for the mother and unborn child – and that it is a vitamin/medicine.
- When asked to identify the benefits of the products, and specifically the changes they had observed in their bodies since taking the products, participants reported having gained weight, feeling good/stronger/healthier, having an improved appearance. Those who had given birth remarked on their "fat baby" and that the products increased their milk production. Some also reported that it increased their appetites.
- Pregnant women also suggested providing strategies to avoid sharing, such as those outlined above.
- Women who had difficulty eating the Plumpy'Mum suggested mixing it with bouillie. Women who had difficulty eating the Vanilla biscuit suggested: '*They have only to close their eyes and eat it little by little and over time they'll be able to eat it without problems,'* and *'they have to get to the idea that it's a medicine and make efforts to eat it; they will see that they'll acquire the taste with time.'* (FGD-C, Boni)

Information desired or required for pregnant women and others

- Information for pregnant women enrolled in present study and who may use products in future
  - Most pregnant women enrolled in the study stated that the information they had been given was sufficient, though some would like to receive additional information. Those women wanted additional information regarding how to use the product or what it contains.
  - Participants and stakeholders suggested that other pregnant women (not currently enrolled in the study) should be given the same information that current participants were given. They should be told that the products are beneficial, contain vitamins and are good for milk production, the pregnant women and their babies. Emphasis should be placed on the products' benefits and advantages.
  - One community leader noted that women should be told to go immediately to CSPS on becoming pregnant [in order to have early access to the product].

Communications methods and locations for pregnant women

- There was widespread agreement that communication on supplement use should be directed via the CSPS and maternity/antenatal healthcare services. In particular, the majority of women agreed that the staff at the health centres, midwives, nurses and other health professionals should provide this information.
- A number of women requested that communication messages be brought to them in the villages; however, it was not clear if this related to existing health posts in the community (CSPS) or whether further outreach was being requested.
- Health professionals indicated that current strategies for disseminating information regarding pregnant women's nutrition include group discussions and individual counselling.
- Group discussions may take place at the community level and at ANC visits.
- CSPS staff and community health workers (ASBC or agents de santé à base communautaire) also conduct home visits and/or make calls to the home if necessary.

- Images may also be used if the women have limited literacy/comprehension of spoken messages; they may better capture the women's attention and more reliably be understood.
- Study participants and other stakeholders suggested that women currently enrolled in the study were well placed to assist in sensitising other women to the benefits of the products; they can tell other women about their experience with the product and that it made their children strong.
- Information for family members
- Husbands and heads of families were identified by women in the study as gatekeepers for acceptance of the supplement in the household and it was suggested that providing them with information would increase support for the supplement use at the household level. As such, there was widespread consistency in women's belief that they should be targeted for tailored messaging.
- Suggested messaging for family members included information about the overall benefits of the supplement for the pregnant woman and her baby and that health workers would support women with supplement use.
- Some women suggested that informing husbands and heads of the family would help sensitise others in the community too by spreading the information widely.
- Information for community members
- In in-depth interviews, participants presented a mixed response on whether others in the community should also be informed about the supplements: while some women asserted *'it's not for them. They don't need to know'*, others found that wider knowledge and sensitisation to the products would improve support for their use.
- Participants in focus groups and stakeholder interviews noted that information regarding the products should be provided to couples and other women in the community, religious leaders, community leaders, and traditional leaders. One community leader stated that it was important that the entire community be informed about the study and the importance of supplements.
- Desired information included the benefits of the products, how they are used, what's in them, and if and when they will be provided or distributed after the study ends. Several participants and others noted that it is important that individuals in the community be told that the products are for pregnant women only and not to be shared.
- Community leaders who specified a preferred source of information mentioned agents de santé (health workers), community health workers, femmes accompagnantes, and study staff. One suggested that the information should be provided at the village level.
- Information for health professionals
- Health professionals asked for additional information regarding the products. They said they would like to know more about the products' composition/ingredients, dosage, advantages, and effects on pregnant women. One asked for information about why the products are not provided to children under five in addition to pregnant women.
- Those who specified a preferred source of additional information mentioned either agents de santé (health workers) or study staff.
- Communications methods for others
- Health workers were consistently found to be best placed to deliver information about the supplements to other pregnant women (should the product be rolled out) and for family members.

<u>Pregnancy announcement: relevant insights to include the women as soon as possible during pregnancy</u>

- Timing of announcement
- Most women currently announce their pregnancies at 2-3 months. Some will wait until 6 or 7 months.
- Women generally announce their pregnancy to their husband either when they notice a change in their period or when their pregnancy has been confirmed at the CSPS. Adherence to these practices differs greatly.
- Some women reported that the husband or in some cases the mother-in-law then shared the news with others in the family. Other women suggested that family members and others in the community would observe the visible signs of pregnancy or may see them attending ANC services.

- Pregnancy was rarely announced formally in the community, but rather it was assumed that community members would notice signs that a woman is pregnant or news would filter through the family.
- The timing appears to depend primarily on whether and when women are aware that they are pregnant.
- Women who delay announcement to 4th month or beyond may do so because they do not understand the importance of early engagement in ANC. Some may delay because the pregnancy is unwanted, or because of work obligations that make it difficult to attend CSPS.
- Visible signs
- Stakeholders reported that there may be visible signs of pregnancy at the time of the announcement, but the signs identified were primarily fatigue, vomiting, and changes in face rather than a visible belly.
- Several stakeholders stated that women do not wait until others can see that they are pregnant; rather they wait until they have confirmed the pregnancy.
- Care-seeking
- The majority of women involved in the study reported having attended at least one ANC visit. Most participants made an active choice to seek ANC services. Others, who did not know they were pregnant but were experiencing feelings of sickness and nausea, sought health care services and on confirmation at the clinic that they were pregnant were advised of the ANC programme and given appointments for when to return.
- Most women go to CSPS when they believe they are pregnant. Some will first go to the dispensary for a test to confirm pregnancy before presenting at maternity.
- Stakeholders reported that few women go to traditional healers for pregnancy.
- Early announcement to access product
- Among stakeholders who were asked if they would encourage women to announce their pregnancies early in order to access the products, there was strong support for doing so.

<u>Family members: what are the expectations of family members concerning supplementation?</u>

- A majority of pregnant women state that household members have a positive attitude toward the products, although a minority say that household members and others believe that their babies will be too big.
- Family members and other stakeholders broadly say that they support the idea of pregnant women taking the supplements.

<u>Community leaders: how can we use their role to support the study?</u>

- Community leaders expressed willingness to help with sensitising pregnant women, household members and the community to the importance of the products and would encourage heads of households to permit their use.
- Community leaders stated that they can gather the women and family members and provide them with information about the products and can urge them to follow the provided instructions regarding product use.
- Some community leaders specifically added that they would address the issue of sharing in their conversations with pregnant women and heads of household and would instruct the heads of household to tell other household members that the products are solely for the use of pregnant women and are not to be shared.
- Some community leaders expressed that they view these activities as part of their role in helping their communities.

<u>Midwives/health care providers: how can they play a role in the promotion of the study?</u>

- Health care providers expressed support for the products and willingness to promote their use. They expressed understanding of the benefits of the product for mother and child.

- Most of the health care providers interviewed volunteered that they would be willing to play a role in distribution of the products and in follow-up. They also stated that they would encourage the women to continue taking the products.
- Health professionals highlighted the role of CPN in encouraging the consumption of the products, informing women about their benefits, and distributing the products.

Preferences regarding distribution

- Where/by whom
  - Participants and stakeholders responded variously that the product should be available from CSPS, maternity, the pharmacy, the dispensary. CSPS/maternity were mentioned most frequently as the preferred location for distribution.
  - It was noted that CSPS was a preferred location because the staff are knowledgeable and because it is convenient.
  - Some suggested that the product be provided in the village as CSPS might be too far away for some women.
  - Persons to be involved in the distribution included nurses, femmes accompagnantes, midwives, health workers. The benefits of working through midwives were that they are already working with the pregnant women and can consult if there are any issues arising out of supplement use, and that they are best able to sensitise the women and ensure the product is used correctly. Femmes accompagnantes were noted to be trusted by the women.

- Frequency of distribution
  - In focus group discussions pregnant women preferred monthly distribution, though some said that daily, weekly or twice monthly was preferred.
  - Other stakeholders also stated a preference for monthly distribution, with weekly or bi-weekly as a favoured alternative. Some suggested that less frequent distribution might cause problems with storage, might make it more difficult to follow the women, and might lead to more temptation to share.
  - It was unclear in many cases whether the participants and stakeholders fully understood the question, as some (especially those who suggested daily distribution) appeared to be stating how frequently they thought the women should consume the product rather than how frequently it should be distributed to them.

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Annex

Table 1. Sociodemographic information	All	Group A	Group B
N	80	40	40
Age, median (Q1-Q3)	26,5 (21-31)	26,0 (21-32)	27,5 (20,75-30)
Marital status, n (%)			
Not married	2 (2,5)	0 (0)	2 (5)
Married	76 (95)	38 (95)	38 (95)
Separated/divorced	2 (2,5)	2 (5)	0 (0)
Widow	0 (0)	0 (0)	0 (0)
School attendance, n (%)			
None	39 (48,8)	19 (47,5)	20 (50)
Quran education	2 (2,5)	1 (2,5)	1 (2,5)
Primary – national language	11 (13,8)	3 (7,5)	8 (20)
Primary – CP1 à CM2	17 (21,1)	11 (27,5)	6 (15)
Secondary 1st level	10 (12,5)	5 (12,5)	5 (12,5)
Secondary 2nd level	1 (1,3)	1 (2,5)	0 (0)
Higher education	0 (0)	0 (0)	0 (0)
Unknown	0 (0)	0 (0)	0 (0)
Household size, no. of people, median (Q1-Q3)	6 (2-21)	5,5 (2-21)	6 (2-15)
Household size, no. of children < 5 years, median (Q1-Q3)	1 (1-1,25)	1 (1-1,25)	1 (0,75-1,25)
Religion, n (%)			
Muslim	21 (26,3)	11 (27,5)	10 (25)
Christian	25 (31,2)	14 (35)	11 (27,5)
Animist	34 (42,5)	15 (37,5)	19 (47,5)
Other	0 (0)	0 (0)	0 (0)
Pregnancy history			
Number of pregnancies (incl. current), median (Q1-Q3)	3 (2-5)	3 (1,75-5)	3 (2-5)
First pregnancy, n (%)	18 (22,5)	10 (25)	8 (20)
Number of deliveries , median (Q1-Q3)	2 (1-4)	1,5 (0,75-4)	2 (1-3,25)
Number of living children, median (Q1-Q3)	1,5 (0,75-3)	1 (0-3)	2 (1-3)
Gestational age in months, median (Q1-Q3)	6 (4-7)	5,5 (4-7)	6 (4-7)
Unknown, n (%)	8 (10)	2 (5)	6 (15)
Number of antenatal consultations, median (Q1-Q3)	1 (1-2)	2 (1-3)	1 (1-2)

Table 2. Acceptability of products at week 4, week 8 and globally

	All		Group A		Group B	
	Plumpy' Mum™ N = 80	Vanilla Biscuit N = 80	Plumpy' Mum™ N = 40	Vanilla Biscuit N = 40	Vanilla Biscuit N = 40	Plumpy' Mum™ N = 40
Appreciation of Product (1 = I detest it to 7 = I like it very much), median (Q1-Q3)						
Colour	7 (6-7)	7 (6-7)	7 (7-7)	7 (6-7)	7 (7-7)	7 (6-7)
Taste	6 (6-7)	7 (6-7)	6 (6-7)	7 (6-7)	6,75 (7-7)	6 (6-7)
Texture/consistency	6 (6-7)	7 (6-7)	6 (5-7)	7 (6-7)	7 (6-7)	6,5 (6-7)
Smell	6 (3-7)	7 (6-7)	6 (3,75-7)	7 (6-7)	7 (7-7)	5,5 (2-7)
Overall appreciation	6 (5-7)	7 (6-7)	6 (5-7)	7 (6-7)	7 (6,75-7)	6 (5-7)
Perceived child likeability	7 (6-7) $_{8dk}$	7 (6-7) $_{2dk}$	7 (6-7) $_{3dk}$	7 (7-7) $_{2dk}$	6,5 (6-7)	7 (6-7) $_{5dk}$
Perceived adult likeability	6 (5-7) $_{15dk}$	6 (4-7) $_{8dk}$	6 (5-6,75) $_{6dk}$	6 (6-7) $_{4dk}$	6 (4-7) $_{4dk}$	6 (5-7) $_{9dk}$
Perception of product use (1= I don't agree at all to 7= I agree completely), median (Q1-Q3)						
Product is convenient to eat	6 (6-7)	7 (6,75-7)	6 (6-7)	7 (6-7)	7 (7-7)	6,5 (6-7)
Product is convenient to eat between meals	6 (5-7)	6 (5-7)	6 (5,75-7)	6 (6-7)	6 (5-7)	6 (4,75-7)
Product is medicine	6 (3,75-6)	6 (5-7)	5 (3-6)	6 (4,5-7)	7 (5-7)	6 (5-7)
Feel full after full portion	5 (3-6) $_{1dk}$	5 (3-6,25)	5 (3-6)	5 (3-6)	6 (5-7)	5 (3-6) $_{1dk}$
Would share with others	1 (1-2,25)	1 (1-3)	1 (1-2)	1 (1-2)	1 (1-3,25)	2 (1-3)
Willingness to use daily for 12 months (1= I don't agree at all to 7= I agree completely), median (Q1-Q3) or n (%)						
Would use if provided	7 (6-7) $_{1dk}$	7 (6-7)	6,5 (6-7)	7 (6-7)	7 (6,75-7)	7 (6-7) $_{1dk}$
Would use if purchased	5 (3-7) $_{1dk}$	6 (4-7) $_{1dk}$	5 (3,75-7)	5,5 (5-7)	6 (3-7) $_{1dk}$	6 (3-7) $_{1dk}$
Would pay how much (CFA)[1]						
0-100	47 (58,7)	58 (72,5)	24 (60)	30 (75)	28 (70)	23 (57,5)
101-200	16 (20)	13 (16,3)	8 (20)	7 (17,5)	6 (15)	8 (20)
201-300	3 (3,8)	5 (6,2)	1 (2,5)	1 (2,5)	4 (10)	2 (5)
301-400	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
401-500	6 (7,5)	2 (2,5)	5 (12,5)	2 (5)	0 (0)	1 (2,5)
> 500	1 (1,3)	0 (0)	0 (0)	0 (0)	0 (0)	1 (2,5)
				(0)		5 (12,5)
Don't know	7 (8,7)	2 (2,5	2 (5)		2 (5)	

[1] The exchange rate for CFA during the study period was between .0017 and .0018 to 1 USD. www.OANDA.com.

	All		Group A		Group B	
	Plumpy' Mum™ N = 80	Vanilla Biscuit N = 80	Plumpy' Mum™ N = 40	Vanilla Biscuit N = 40	Vanilla Biscuit N = 40	Plumpy' Mum™ N = 40
Acceptability of portion size (for a snack), n (%)						
Portion size is acceptable	75 (93,8)	72 (90)	37 (92,5)	37 (92,5)	35 (87,5)	38 (95)
Too small	1 (1,2)	3 (3,8)	1 (2,5)	2 (5)	1 (2,5)	0
Too big	4 (5)	5 (6,2)	2 (5)	1 (2,5)	4 (10)	2 (5)
Preference for continuation of consumption during pregnancy and during the breast feeding period at week 8, n(%)						
Plumpy'Mum™	32 (40)		11 (27,5)		21 (52,5)	
Vanilla Biscuit	48 (60)		29 (72,5)		19 (47,5)	

Table 3. Frequency of requests to change products during choice period

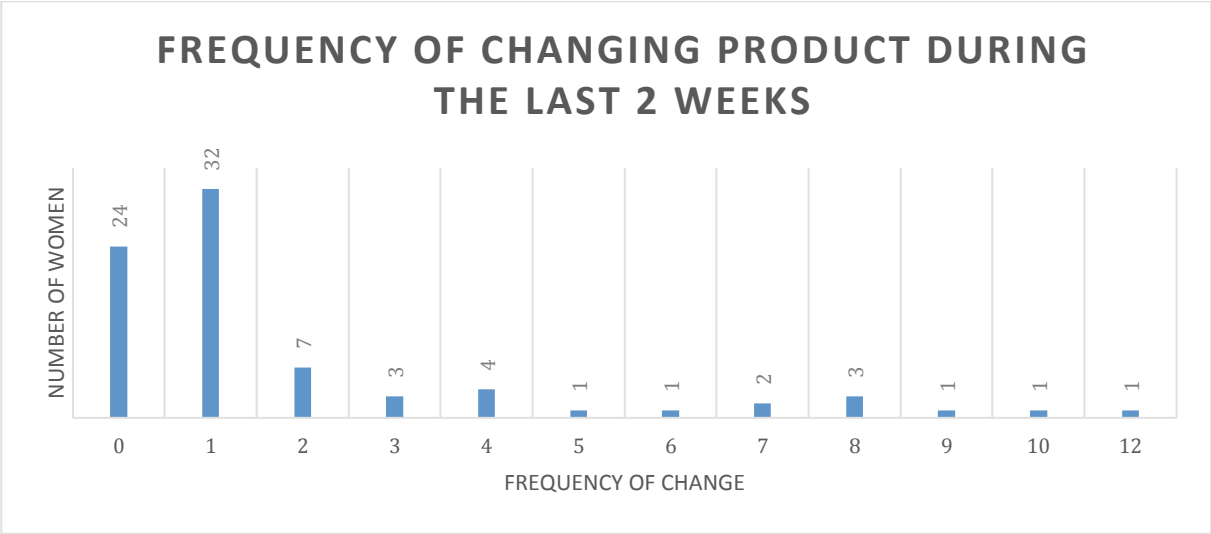

Table 4. Home activities during 12h observation (number of observations)

	All		Group A		Group B	
	Plumpy' Mum™ N = 40	Vanilla Biscuit N = 40	Plumpy' Mum™ N = 20	Vanilla Biscuit N = 20	Vanilla Biscuit N = 20	Plumpy' Mum™ N = 20
Food related activities, n (%)						
Eating	299 (5,2)	319 (5,5)	157 (5.5)	174 (6.0)	145 (5.0)	142 (4.9)
Drinking	41 (0,7)	31 (0,5)	20 (0.7)	20 (0.7)	11 (0.4)	21 (0.7)
Preparing or cooking food	507 (8,8)	511 (8,9)	276 (9.6)	254 (8.8)	257 (8.9)	231 (8.0)
Purchasing food	2 (0,0)	3 (0,1)	2 (0.1)	2 (0.1)	1 (0.0)	0 (0.1)
Storing food	10 (0,2)	12 (0,2)	7 (0.2)	3 (0.1)	9 (0.3)	3 (0.0)
Sleeping	328 (5,7)	373 (6,5)	167 (5.8)	186 (6.5)	187 (6.5)	161 (5.6)
Lying	179 (3,1)	191 (3,3)	66 (2.3)	86 (3.0)	105 (3.6)	113 (3.9)
Sitting quietly	1177 (20,4)	1190 (20,7)	562 (19.5)	649 (22.5)	541 (18.8)	615 (21.4)
Standing	325 (5,6)	313 (5,4)	149 (5.2)	132 (4.6)	181 (6.3)	176 (6.1)
Dressing	32 (0,6)	29 (0,5)	17 (0.6)	13 (0.5)	16 (0.6)	15 (0.5)
Bathing/washing hands, face, hair	94 (1,6)	101 (1,8)	43 (1.5)	49 (1.7)	52 (1.8)	51 (1.8)
Using toilet	41 (0,7)	59 (1,0)	17 (0.6)	28 (1.0)	31 (1.1)	24 (0.8)
Reading	0 (0,0)	24 (0,4)	0 (0.0)	0 (0.0)	24 (0.8)	0 (0.0)
Writing	0 (0,0)	0 (0,0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Praying	12 (0,2)	28 (0,5)	8 (0.3)	2 (0.1)	26 (0.9)	4 (0.1)
Leaving the house / Being outside the house	860 (14,9)	764 (13,3)	437 (15.2)	283 (9.8)	481 (16.7)	423 (14.7)
Housework (unspecified)	499 (8,7)	478 (8,3)	231 (8.0)	246 (8.5)	232 (8.1)	268 (9.3)
Beating mats / carpets	0 (0,0)	0 (0,0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Mopping / washing floor	3 (0,1)	8 (0,1)	3 (0.1)	7 (0.2)	1 (0.0)	0 (0.0)
Sweeping	117 (2,0)	64 (1,1)	64 (2.2)	25 (0.9)	39 (1.4)	53 (1.8)
Washing the clothes	171 (3,0)	155 (2,7)	131 (4.5)	39 (1.4)	116 (4.0)	40 (1.4)
	All		Group A		Group B	
	Plumpy'	Vanilla	Plumpy'	Vanilla	Vanilla	Plumpy'

	Mum™ N = 40	Biscuit N = 40	Mum™ N = 20	Biscuit N = 20	Biscuit N = 20	Mum™ N = 20
Sewing/knitting	64 (1,1)	0 (0,0)	64 (2.2)	0 (0.0)	0 (0.0)	0 (0.0)
Cleaning yard/garden	6 (0,1)	26 (0,5)	6 (0.2)	19 (0.7)	7 (0.2)	0 (0.0)
Tending to animals (e.g. feeding, watering, grooming etc)	16 (0,3)	12 (0,2)	5 (0.2)	6 (0.2)	6 (0.2)	11 (0.4)
Caring for children (bathing, dressing, feeding, playing)	159 (2,8)	199 (3,5)	47 (1.6)	163 (5.7)	36 (1.2)	112 (3.9)
Washing dishes	218 (3,8)	147 (2,6)	89 (3.1)	62 (2.2)	85 (3.0)	129 (4.5)
Collecting water	236 (4,1)	320 (5,6)	149 (5.2)	207 (7.2)	113 (3.9)	87 (3.0)
Collecting wood	10 (0,2)	6 (0,1)	7 (0.2)	5 (0.2)	1 (0.0)	3 (0.1)
Chopping wood	5 (0,1)	2 (0,0)	4 (0.1)	0 (0.0)	2 (0.1)	1 (0.0)
Light wood	74 (1,3)	58 (1,0)	41 (1.4)	26 (0.9)	32 (1.1)	33 (1.1)
Pound	68 (1,2)	39 (0,7)	20 (0.7)	24 (0.8)	15 (0.5)	48 (1.7)
Others (not specified in the list), n (%)	163 (2,8)	248 (4,3)	73 (2.5)	146 (5.1)	102 (3.5)	90 (3.1)