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Research suggests that infants fed human milk from a bottle versus the breast may have higher weight gains in the first six to 12 months of life. The purpose of this study was to determine if infants fed human milk directly from the breast differed in growth and adiposity measurements compared to those fed human milk from the bottle. Infant's weight, length, and tricep and subscapular skinfold thickness were measured at two, four, and six months of age. Mothers reported infant birth weight and length and completed monthly questionnaires on infant feeding practices (e.g., number of human milk feedings by bottle or breast per day, age of introduction to complementary foods, and infant bottle-emptying behavior). Infants were placed into two groups based on their reported mode of feeding at three months: Nursing Group (NG, n=15), infants fed predominantly at the breast with less than 25% of the daily feeds from a bottle and Bottle Group (BG, n=10), infants fed human milk from the bottle 25% or more of the daily feeds. Change in BMI z-scores from two to four months were significantly different between groups (NG=-0.16 ± 0.62 vs. BG=0.56 ± 0.99, p=0.03). Change in BMI z-scores from four to six months were no longer significantly different between groups (NG=0.32 ± 0.62 vs. BG=0.60 ± 0.65, p=0.3). Changes in skinfold thickness measures and z-scores were not statistically different between groups at any age. Weight gain velocity was compared to WHO weight velocity standards. Only three infants in each group exceeded the 75<sup>th</sup> percentile for weight gain velocity from two to four months, and two in each group from four to six months. The majority of parents reported those infants fed human

milk from the bottle finished the bottle “most of the time” or “always.” None of the infants were introduced to complementary foods before four months. The results of this study suggest that bottle-feeding human milk may be related to differences in weight gain during two to four months. However, follow up for a longer time period with a larger sample size is necessary to fully investigate the relationship of bottle-feeding with infant growth.

RELATIONSHIP OF FEEDING HUMAN MILK  
BY BREAST VERSUS BOTTLE  
WITH INFANT GROWTH

by

Kelsey Wilson

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Approved by

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Committee Chair

APPROVAL PAGE

This thesis written by KELSEY WILSON has been approved by the following committee of the Faculty of The Graduate School at The University of North Carolina at Greensboro.

Committee Chair \_\_\_\_\_  
Cheryl Lovelady

Committee Members \_\_\_\_\_  
Lenka Shriver

\_\_\_\_\_  
Susan Calkins

\_\_\_\_\_  
Date of Acceptance by Committee

\_\_\_\_\_  
Date of Final Oral Examination

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## CHAPTER I

### INTRODUCTION

Rates of childhood obesity tripled from 1980 to 2004<sup>1</sup>. Recent estimates of childhood obesity show that although rates currently remain stable, they are still high. The most recent National Health and Nutrition Examination Survey (2011-2012 NHANES) reported that approximately 8% of infants and toddlers from birth to two years of age had a high weight-for-recumbent length ( $\geq 95^{\text{th}}$  percentile). Approximately 17% of children and adolescents ages two to 19 years were obese ( $\geq 95^{\text{th}}$  percentile)<sup>2</sup>. In 2007 an expert committee on the evaluation and prevention of child and youth obesity recommended the use of weight-for-recumbent length greater than the 95<sup>th</sup> percentile to represent excess weight in children under two years of age<sup>3</sup>. The negative health and economic consequences of childhood obesity have made prevention of childhood obesity an utmost concern to the United States<sup>4-9</sup>. This is reflected in the Healthy People 2020 initiatives to develop prevention strategies and reduce the proportion of children who are overweight or obese<sup>10,11</sup>.

A relationship between rapid infant weight gain and later development of childhood obesity has been established suggesting that prevention of childhood obesity may begin as early as infancy<sup>12,13</sup>. Many potential contributors to rapid infant weight gain have been suggested in previous research studies including genetic influences,

macronutrient differences between formula and human milk, bioactive components found in human milk (but not formula), and time of introduction of complementary foods<sup>14-23</sup>.

Large meta-analyses have established that breastfeeding is protective against development of childhood obesity<sup>24-26</sup>. The Infant Feeding and Practices Study (IFPS) II reported a significant amount of mothers feeding human milk by bottle. The survey reported that sixty-eight percent of breastfeeding mothers (with infants less than 4.5 months old) had expressed milk, with 25% doing so on a regular schedule<sup>27</sup>. Reasons for this increase include more working mothers and increased availability of quality breast pumps<sup>27-30</sup>. Feeding mode, that is at the breast or from a bottle, may act as a contributor to rapid infant weight gain. It is hypothesized that infants fed directly at the breast have a better self-regulation of energy intake. Mothers of breast fed infants may be more aware of infants' satiety cues and less concerned with the amount of milk an infant is consuming since they cannot physically see it; while mothers taking the time to pump and express milk may be more likely to encourage infants to finish the bottle and unknowingly disrupt the infants self regulation mechanism. Lastly, the physiological mechanism of feeding is different between breast and bottle, bottle fed infants do less work to get milk so they may be more likely to drink a larger volume. However, there is no evidence to support this hypothesis.

There is very little research investigating the mode of infant feeding on infant growth. Bartok completed a small study of infants fed only human milk to assess the contribution of bottle-feeding as a risk factor for early accelerated growth and fatness<sup>31</sup>. While the sample size was small, Bartok did find that 10% of nursing infants and 33% of

infants fed human milk by bottle exceeded the sex specific 85<sup>th</sup> percentile weight gain velocity for the four to six month age interval; however, this difference did not reach statistical significance (p=0.12). Weight gain velocity from zero to two and two to four month intervals were equivalent between groups.

The IFPS II, a large survey of mothers, reported that among infants fed human milk only by both bottle and breast, monthly weight gain increased from 729 g when few feedings were by bottle, to 780 g when most feedings were by bottle <sup>32</sup>. However, researchers did not state whether this association was significant or not. In addition, researchers considered bottle-emptying behavior as a form of self-regulation. They reported that regardless of bottle contents, infants who often emptied their bottles in early infancy had increased odds of having excess weight in late infancy compared to those who rarely emptied their bottles. Excess weight gain was defined as a weight-for-age z-score >1 <sup>33</sup>.

The current study (the Feeding and Infant Growth Study) is a longitudinal observational study designed to determine if infants fed human milk directly from the breast differed in growth and adiposity measurements compared to those fed human milk from the bottle. The Feeding and Infant Growth Study utilized a prospective study design and direct measurements of infant growth over time to avoid errors in maternal recall and reporting. It is unique in that it considered the mode of feeding human milk and the timing of introduction to solid foods, which have been shown to impact infant growth <sup>31,32,34,35</sup>. As indicated by the previous studies, the mode of milk delivery, direct breastfeeding versus bottle-feeding, may play an important role in infant self-regulation

and energy intake. The information gained from this study will advance the current research in the area of feeding and infant growth.

### **Specific Aims**

The primary goal of the study was to examine the associations between feeding modes, bottle-emptying behaviors, and timing of complementary food introduction with infant growth during the first six months of life. The first specific aim was to determine if infants fed human milk directly from the breast differed in growth and adiposity measurements compared to those fed human milk from the bottle during the first six months of life. We evaluated several different measurements (weight gain velocity, change in BMI z-scores, and skinfold thickness). We hypothesized that infants bottle fed human milk would have a greater weight gain velocity, greater change in BMI z-scores and have higher skinfold thickness measurements, compared to infants fed directly from the breast.

Our secondary aim was to determine if infants with low bottle emptying behavior differed in growth and adiposity measures compared to infants with high bottle emptying behavior. First, infants fed primarily human milk by bottle (n=10) were divided into two groups: (1) high bottle-emptying behavior; (2) low bottle-emptying behavior. Infants that “never,” “rarely,” or “sometimes” empty the bottle were considered low-emptying, while infants that emptied the bottle “most of the time” or “always” were considered high-emptying. We hypothesized that infants with high bottle-emptying behavior would have a greater weight gain velocity, greater change in BMI z-scores and have a higher skinfold

thickness than infants with low bottle-emptying behavior. Data on volume of bottles was also collected.

The final aim was to determine if the age at which introduction to complementary foods occurs is related to infant growth during the first six months of life. We evaluated if infants introduced to complementary foods earlier (less than four months old) versus later (between four and six months old) differed in growth measures during the first six months of life. We hypothesized that infants introduced to complementary foods at an earlier age would have a greater weight gain velocity, greater change in BMI z-scores and have a higher skinfold thickness compared with infants introduced to complementary foods later.

## CHAPTER II

### REVIEW OF LITERATURE

#### **Prevalence of Childhood Obesity**

The prevalence of obesity among children is increasing in the United States and rates have tripled between 1980 to 2004 <sup>1</sup>. The most recent National Health and Nutrition Examination Survey (2011-2012 NHANES) reported that approximately 8% of infants and toddlers from birth to two years of age had a high weight-for-recumbent length ( $\geq$  95<sup>th</sup> percentile). Approximately 17% of children and adolescents ages two to 19 years were obese ( $\geq$  95<sup>th</sup> percentile) <sup>2</sup>.

Childhood obesity impacts the physical and mental health of the child, as well as the economic health of the nation. Obese children and adolescents are at an increased risk for cardiovascular (hypercholesterolemia, dyslipidemia, hypertension) <sup>4-8</sup>, endocrine (insulin resistance, type 2 diabetes) <sup>36-39</sup>, pulmonary (asthma, obstructive sleep apnea syndrome) <sup>40,41</sup> and orthopedic problems <sup>42,43</sup>. Mental health consequences include low self-esteem, depression, and disturbed body image <sup>44,45</sup>. Childhood obesity is also a risk factor for adult obesity <sup>46</sup>. The resulting costs of treating childhood obesity are high. The Center for Disease Control (CDC) estimates the financial cost of pediatric obesity to be approximately three billion dollars annually, while Finklestein et al. estimated 147 billion dollars for obesity across all ages in 2008 <sup>9,47</sup>.

The guidelines for both the Department of Health and Human Services (DHSS) Healthy People initiatives (2010, 2020) and the American Academy of Pediatrics (AAP) reflect on the need for prevention strategies and a reduction in the proportion of children who are overweight or obese<sup>10,11</sup>. Research has indicated that the contributors of childhood obesity are complex and multidimensional<sup>48</sup>, involving genetic, environmental and other factors<sup>14-17</sup>. However, this study focuses on early infant feeding practices, a specific area that has been implicated to play a role in the development of childhood obesity.

### **Childhood Obesity and Breastfeeding**

The American Academy of Pediatrics (AAP) recommends exclusive breastfeeding for at least the first six months of life<sup>49,50</sup>. However, not all mothers follow this recommendation. The National Center for Chronic Disease Prevention and Health Promotion breastfeeding report, developed from the National Immunization Surveys of 2013-14, shows that approximately 79% of infants begin breastfeeding, 49% were breastfed at six months, and only 27% were breastfed at 12 months. Only about 41% of mothers were exclusively breastfeeding at three months, with approximately 19% at six months<sup>51</sup>. Rates of breastfeeding are usually lower among minorities<sup>52</sup>.

Numerous studies investigating the association of breastfeeding with childhood obesity have been conducted between 1920 and 2004. Although the studies are primarily observational, their findings suggest protective attributes of breastfeeding on childhood obesity risks. Three meta-analyses related to breastfeeding and obesity have been published discussing the individual studies in detail<sup>24-26</sup>. Arenz et al. analyzed data from

nine different studies (from 1997-2003) with more than 69,000 participants<sup>25</sup>. Arenz et al.'s meta-analysis had the most strict inclusion criteria in comparison with the other two meta-analyses<sup>24,26</sup>. Included studies were required to include a population-based cohort, be a cross sectional, or a case control study. In addition, they had to adjust for at least three confounding variables, provide an odds ratio (OR) or relative risks, follow up with participants for five to 18 years, report feeding mode, and use one of three cutoffs of Body Mass Index (BMI) percentile as their definition of obesity (24).

The Arenz et al.'s meta-analysis found that breastfeeding significantly reduced the risk of obesity in children with an adjusted odds ratio (AOR) of 0.78, (95% confidence interval (CI): 0.71, 0.85). The homogeneity results showed that there were no significant differences in study types, age groups, definition of breast-feeding or obesity, or number of confounding factors adjusted for. In four<sup>53-56</sup> of the eight studies included that provided data on breastfeeding duration, a dose-dependent effect of breast-feeding duration on the prevalence of obesity was observed. Arenz et al. concluded that breast-feeding has a small but consistent protective effect against obesity in children. Arenz et al. also noted that although all studies adjusted for at least three confounders, residual confounders might still limit the findings. However, three of the studies<sup>53,55,57</sup> controlled for six or more confounders, thus indicating that breastfeeding has protective effects on childhood obesity.

In another meta-analysis, Owen et al. analyzed data from 61 different studies between 1970 and 2004<sup>26</sup>. The inclusion criteria was broader allowing for any definition of overweight and obesity, shorter follow up period (one to 16 years of age), and included



several different types of studies. In addition, reporting an odds ratio or controlling for covariates was not criteria for inclusion. The main analysis was conducted from calculated odds ratios (from reported prevalence rates of obesity in different feeding groups) as well as the odds ratio estimates provided by 28 (n= 298, 900) of the 61 studies. It was concluded that breastfeeding is associated with a decreased risk of childhood obesity compared to formula feeding with an odds ratio 0.87 (95% CI: 0.85– 0.89). A sub-analysis was performed on six of the studies<sup>53,55,58-61</sup> to control for confounders. Results from the sub-analysis still showed a reduced effect of breastfeeding on obesity with an odds ratio of 0.93 (95% CI: 0.88-0.99). In addition Owen et al. noted that another sub-analysis of four studies<sup>54,62-64</sup> where the initial group was defined as exclusive, there was a slightly greater protective effect with an odds ratio of 0.76 (95% CI: 0.70-0.83).

Harder et al. analyzed the data from 17 studies between 1979 and 2003<sup>24</sup>. The inclusion criteria required reporting an odds ratio with 95% CI data on duration of breastfeeding, and comparison of breastfed to exclusively formula-fed infants. They allowed for any definition of overweight and obesity and did not require an adjusted OR or control for covariates. In addition, the study allowed for a shorter follow up time than Arenz et al. (six months to 15 years). Similar to the other studies, Harder et al.'s meta-analysis supports a protective effect of breastfeeding against childhood overweight and obesity. More specifically they found that the risk for being overweight was reduced by 4% (odds ratio = 0.96/month breastfeeding, 95 percent CI: 0.94, .98) for each month of breastfeeding up to nine months. Harder et al.'s analysis is unique from the other meta-

analyses in that it measured and analyzed duration of breastfeeding month by month to determine effect on childhood overweight.

There are several limitations to the studies performed on obesity and breastfeeding, mainly related to their observational nature. In order to perform typical meta-analyses or to provide a causal effect, randomized studies are required. However, randomization of breastfeeding on an individual level is not ethical. In addition, many of the studies used varying definitions of overweight and obesity, complicating the interpretation of the results. For example, some studies used  $> 90^{\text{th}}$  percentile for weight and age while other studies used  $> 95^{\text{th}}$  percentile for BMI to define childhood obesity. Some of the studies adjusted for confounders, while others did not. Lastly, the three meta-analyses were done during a similar time period and include overlapping studies, which may explain the similarity in results. The World Health Organization (WHO) performed an updated analysis which included studies from the three previous meta-analyses and newer studies<sup>65</sup>. Thirty-three studies were included and the results supported the protective effect of breastfeeding and overweight/obesity with an odds ratio of 0.78 (95% CI: 0.72-0.84).

Sibling studies were not included in the meta-analyses. Sibling studies allow researchers to reduce bias due to environmental and genetic factors that are difficult to control for in other observational studies. Gillman et al. examined a sibling cohort to determine if duration of breastfeeding in sibling pairs (n=2372 participants) was associated with a reduced risk of being overweight (BMI  $> 85^{\text{th}}$  percentile) in adolescence (9 -14 years old)<sup>66</sup>. The study specifically looked at sibling pairs that were

discordant, excluding those pairs that breastfed for the same duration. On average, siblings who were breastfed for a longer duration were breastfed for 3.7 months longer than shorter duration siblings. The confounding variables that were controlled for included: birth weight, birth order, sex, Tanner stage, menarchal status, physical activity, and energy intake. After adjustment for confounders, researchers observed a protective effect with an OR of 0.92 (95% CI = 0.76–1.11). However, this study was limited because participants' heights and weights were self-reported. A larger sibling sample size may be necessary to confirm results in the future studies

Another sibling study by Nelson et al. examined whether breast-feeding exposure and duration were protective against adolescent overweight, using both traditional cohort analysis and a subset of siblings<sup>67</sup>. Researchers hypothesized that obesity risk should be greater among sibling pairs fed differently compared with those fed similarly. The study results provided no evidence of breast-feeding effects on weight within discordant trends. However, this could be due to small sample size (the number of discordant sibling cases was only 112). The full cohort analysis did show an effect. This suggests the relationship between breastfeeding duration and future overweight and obesity may not be causal, but attributable to unmeasured confounders. It is important to note that although sibling studies reduce unmeasured confounding they also limit generalizability. For example, sibling pairs who are discordantly breastfed or discordantly overweight may not be representative of all US adolescents.

In summary meta-analyses indicate a small protective effect of breastfeeding on obesity, however, a causal effect can only be suggested and not determined due to ethical

constraints on study design. The mechanisms behind this protective effect are unclear. Some researchers hypothesize it may be due to the physiological composition of breast milk<sup>21,22</sup>. For example, appetite hormones present in breast milk may play a role in regulating intake<sup>22</sup>. In addition, research has shown that formula contains a higher proportion of protein, which may lead to increased fat deposition in formula fed infants<sup>22,68</sup>.

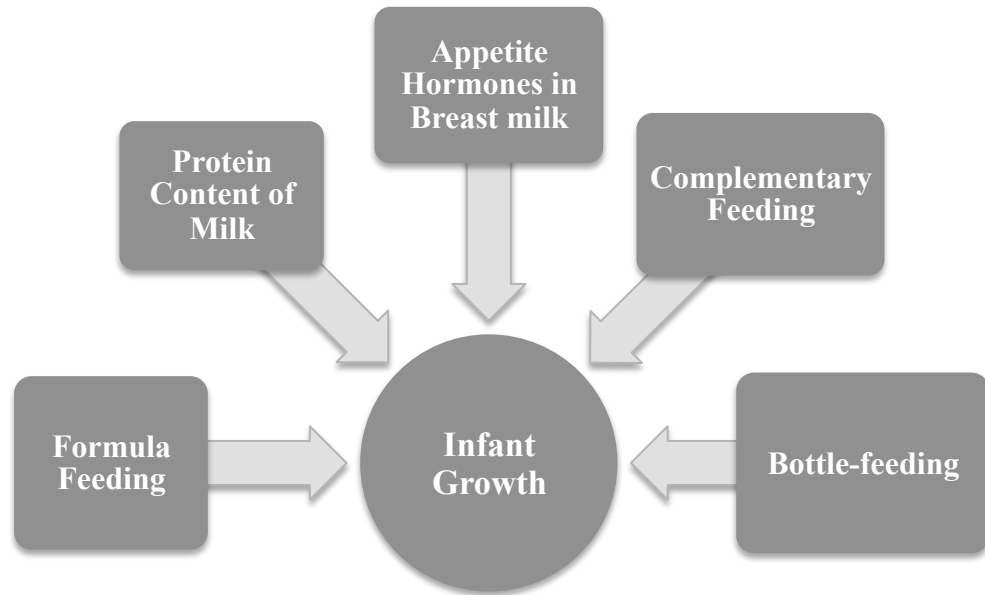
### **Childhood Obesity and Rapid Infant Weight Gain**

A relationship between rapid infant weight gain and later childhood obesity has been established. A meta-analysis of 10 cohort studies from US and European countries with a total of 47, 661 participants was published in 2011<sup>12</sup>. Infant weight gain was calculated as change in weight standard deviation scores between birth and 12 months of age. Follow up of infants in childhood ranged from six to 14 years old. The International Obesity Task Force (IOTF) criteria were used to define childhood obesity. The IOTF provides international BMI cut points by age and sex from two to 18 years of age. The cut points correspond to an adult BMI of 30. Infant weight gain was positively associated with subsequent childhood obesity risk. More specifically each one unit increase in standard deviation scores between birth and 12 months resulted in a two-fold higher risk of childhood obesity with an OR 1.97 (95% CI = 1.83 - 2.12). While this is a large well-powered meta-analysis, the research was conducted across several decades from 1931 and 1992, which may not be representative of the current world population. In addition the standard deviation scores were created from the British 1990 standard and not the World Health Organization (WHO) Multicenter Growth Reference Study (MGRS) group.

A recent study <sup>13</sup> observed 53 infants at birth and three times during infancy and childhood. At follow up between six and 11 years of age 30% of children were overweight or obese ( $\geq 85^{\text{th}}$  percentile). More total rapid weight gain from zero to four months led to a two-folds odds ratio (1.98, 95% CI 1.05-3.74,  $p= 0.04$ ) of overweight of obesity ( $\geq 85^{\text{th}}$  percentile) at six to 11 years of age. Similar results were observed for infant weight gain from zero to eight months old. The results of this study confirm the findings of the Dreut et al <sup>12</sup>. Infants who grow more rapidly in infancy are more likely to be overweight or obese in childhood. There are many potential contributors to rapid infant weight gain that have been of interest to researchers including macronutrient differences between formula and human milk, bioactive components found in human milk, but not formula, and time of introduction of complementary foods <sup>18,22,34,35,69,70</sup>.

## Potential Contributors to Rapid Infant Weight Gain

Figure 1. Potential Contributors to Rapid Infant Weight Gain



Description. There are several factors that contribute to rapid infant weight gain. This figure shows several potential contributors represented in research. Each one will be discussed in more detail below.

### Formula and the Protein Growth Hypothesis

The relationship between the physiological composition of breast milk and the prevalence of childhood obesity has been investigated to some extent. The protein-growth hypothesis postulates that the protein content of the infant diet can act as an independent determinant of growth in infancy and later life. The WHO and Food and Drug Administration (FDA) define recommended values for protein intake of infants in terms of a percentage of energy intake (protein energy percentage (PE%)<sup>71</sup>. Human milk is approximately five PE%, with formula containing between seven and eight PE%<sup>72</sup>.

Infants fed formula are exposed to higher concentrations of protein from birth which may explain why they tend to be significantly larger in length, weight, and weight-for-length than breastfed infants<sup>23,72,73</sup>.

This hypothesis is supported by multiple experimental and observational studies. Hester et al. did a meta-analysis of 20 observational studies comparing the macronutrient and energy content of breast milk with formula (49). Researchers systematically reviewed articles that assessed macronutrient and energy content as well as volume of intake by infants during the first month of life. The results showed that formula contained higher protein and higher energy than breast milk. In addition, compared with breast fed infants, formula fed infants consumed a higher volume of milk<sup>18</sup>. To determine volume of milk intake breast fed infants were weighed before and after feedings, while the bottles of formula fed infants were weighed before and after feedings. This may be because infants fed directly at the breast have a better sense of self-regulation. Mothers of breast fed infants may also be more aware of infants' satiety cues and less concerned with the amount of milk an infant is consuming since they cannot physically see it. For example, a formula feeding mother may reintroduce the bottle several times after the infant has turned away in attempt to get her infant to finish the bottle. This may be because she wants to make sure her infant is eating enough to grow or sleep or perhaps she may not want to waste the expensive formula that has already been prepared. A breastfeeding mother may be more willing to trust that her infant is full when he/she comes off the breast. However, there is not evidence to support this hypothesis.

Escibano et al. performed a double blind, randomized, intervention trial during the first eight weeks of life <sup>19</sup>. Infants were randomly assigned to a low protein (n= 24, 1.25 g per 100 ml) or high protein formula (n = 17,1.6 g per 100 ml). Both low protein and high protein formulas contained the same amount of calories. Researchers did not note if they were able to control for volume of formula consumed by infants. An observation group of breastfed infants (n= 25) were used as a reference. Anthropometric measurements of infants were taken at birth, six, 12, and 24 months old. At six months old fat free mass (FFM) and fat mass (FM) was assessed using isotope dilution. They found that at six months old infants fed a higher protein formula had a higher weight, weight gain velocity, weight-for-length, and BMI compared to infants fed lower protein formula or breast milk. Also at six months old, total fat mass (TFM), fat mass index (FMI), and fat mass z-score tended to be higher in the higher protein group as compared with the lower protein group, but it was not statistically significant. Linear regression provided continued support for the protein- growth hypothesis, FM at six months was strongly correlated with BMI at 6, 12 and 24 months <sup>19</sup>.

Koletzko et al. conducted another randomized clinical trial to determine if there was a relationship between protein intake during infancy and rapid infant weight gain in the first two years of life. Infants were randomly assigned a formula type: higher (n=322) or lower protein content (n=313) <sup>20</sup>. The higher protein formula contained 11.7% of energy from protein while the lower protein formula contained 7.6%. The two groups were compared to a breastfed reference group (n=298). Researchers collected three day weighed food records and anthropometric measurements including weight, length,



weight-for-length, and BMI at three, six, 12, and 24 months of age. Results indicated that intake of the higher protein formula was associated with increased growth in weight, but not length. Infants fed the high protein formula had significantly higher weight, weight-for-length, and BMI as compared to infants on the lower protein formula or who breastfed. This relationship existed after the first six months of life and continued through 12 and 24 months. At 24 months the adjusted z-score for weight-for-length of low protein infants was 0.20 lower than the high protein infants and did not differ from the breastfed reference group. The results of this study suggest that higher protein intake in early infancy may impact risk of future overweight and obesity. However, research studies that follow infants beyond 24 months need to be conducted to see if this association persists in childhood.

More evidence from experimental studies is necessary to confirm the protein-growth hypothesis. A clear mechanism of action for how high protein in formula leads to increased growth has not been established. However, it has been suggested that the amount of protein in the early diet may impact growth through insulin and insulin-like growth factor-I (IGF-I). Intake of excess protein may stimulate the secretion of insulin and IGF, increasing growth and adipogenic activity<sup>74</sup>. Research has shown that infants fed formula have higher serum levels of IGF-I when compared to breastfed infants<sup>69,75</sup>

## **Bioactive Components of Human Milk**

Another potential mechanism by which human milk may reduce the risk of childhood obesity is its unique biological components not found in formula. It is well known that human milk contains immune factors transferred from mother to child. In addition, however, appetite hormones present in human milk are hypothesized to play a role in the regulation of infant growth, appetite in infancy, and programming later in life<sup>69</sup>. The components found in human milk that may influence appetite include: leptin, adiponectin, resistin, ghrelin, obestatin, GLP-1, peptide YY (PYY), and insulin<sup>22,70,76,77</sup>. If appetite hormones present in human milk are transferred to breast fed infants they may impact satiety and self-regulation of infants. If this theory were correct formula fed infants who are not exposed to these appetite hormones during feedings would not be able to self-regulate in the same way and would be at higher risk for rapid infant weight gain. However, research on these hormones in relation to infant growth and appetite are very limited and more research is needed to determine the role these components may play in infant feeding and growth.

## **Introduction to Complementary Foods**

Rapid infant weight gain may be caused by factors other than milk type. Age at introduction to complementary foods is another area that has been studied in relation to infant growth. The American Academy of Pediatrics (AAP) recommends introduction of solid foods around six months of age<sup>49</sup>. Some studies have shown that early introduction of complementary foods (e.g., less than four months) has been positively associated with rate of weight gain during infancy, increased weight, or measures of adiposity in infants,

toddlers, and preschool age children<sup>34,35,78</sup>. Since some studies do not show clear evidence, more research is necessary to determine the impact introduction of complementary foods has on growth.

A study by Sloan et al.<sup>34</sup> found that early weaning was associated with rapid infant weight gain. The sample included 234 healthy term infants. Ninety-two infants (42%) were weaned before four months of age. Weaning was defined as introduction of foods other than breast milk, formula, or other drinks and included infant cereal added to bottles. Infants weight at birth, eight weeks, and seven months was taken from Child Health System administrative database. A study pediatrician weighed infants at 14 months of age. Weight and weight gain z-scores of infants in the two weaning groups (infants weaned before 4 months or infants weaned at 4 months or after) were compared. Infants who were weaned early had significantly higher seven month weight z-scores and 14 month weight z-scores ( $p=0.004$ ) and a faster rate of weight gain between eight weeks and 14 months ( $p=0.003$ ). Both groups had similar birth weights. The relationship continued to be significant after controlling for duration of breastfeeding. Another study<sup>79</sup> found similar results as Sloan, but the difference in weight between the two groups was no longer significant at 18 months.

A different study found no association of introduction to solids with infant growth Mehta et al.<sup>80</sup> investigated whether infants introduced to solid foods between three to four months of age would have a higher body composition at one year than infants introduced to solid foods at six months of age. Healthy term infants were recruited at three months and randomized to early ( $n=71$ ) or late ( $n=76$ ) introduction of solid foods.

Infant anthropometrics (weight, length, head circumference) and body composition was determined using dual energy x-ray absorptiometry at three, six, nine and 12 months of age. In addition, parents of infants completed three-day diet diaries at three, six, nine and 12 months. Results indicated no differences in growth or body composition in infants introduced to solid foods early versus late during the first year of life. Also, the diet diaries revealed that there was no difference in total energy intake at any age between groups.

These conflicting results indicate that more evidence is necessary to determine if timing of complementary feeding may truly influences infant growth. The many differences in study design may have impacted the findings. The Mehta et al. study was performed in the US as a randomized trial introducing solids to infants either between three and four months or at six months. Infants were measured directly by researchers at multiple time points. Also, interestingly all infants were white (to attempt to eliminate race as a confounding variable) and consumed formula after recruitment for the study at three months of age. The Sloan et al. study was performed in the United Kingdom as an observational study using data points from a database to collect the majority of measurements. Over half of the infants were breastfed until 4 months, which was controlled in the study results. The early weaning group included infants introduced to foods anytime before four months, rather than the set period of three to four months. It specified including cereal added to infant bottles, which was not discussed in the study by Mehta et al.

## **Bottle-feeding and Rapid Infant Weight Gain**

Breastfeeding is associated with a decreased risk for childhood obesity; however, the mechanisms behind this relationship are unclear. Recent research has identified bottle-feeding, independent of milk type (breast milk versus formula), as a potential predictor for rapid infant weight gain<sup>31-33,81</sup>. Bottle-fed infants may lack self-regulation that is developed from feeding directly at the breast leading to increased milk intake and potential rapid infant weight gain. This may be because the sucking mechanism differs between the breast and bottle. Milk flows more easily from a bottle requiring less work, so infants may more easily consume higher volumes of milk. Also, there are more opportunities for parents to encourage infants to empty bottles because they can physically see the milk that remains in the bottle. Breastfeeding mothers cannot see the volume of milk infants are consuming, so they may be more dependent on infant satiety cues. While these explanations are intriguing there is no evidence available to support them.

Bartok performed a prospective pilot study observing the milk delivery method, and the growth and body composition of infants<sup>31</sup>. Mother infant dyads were recruited to be part of the nursing group (NG; n=19) or the bottle-feeding human milk group (BG; n=18). Mothers in the NG group limited bottle-feeding to one bottle per day of human milk or formula. BG mothers must have returned to work full-time by six months postpartum (or provided pumped milk for a similar amount of time per week). Infants were measured monthly for six months. At each lab visit, researchers assessed infant growth, body composition, and feeding mode. Visits were scheduled within one week of

the infant's monthly "birthday." Feeding mode was assessed by parent estimation of milk consumed in the past month (percentage that was human milk and percentage consumed at the breast versus the bottle). NG infants received more than 98% of human milk at the breast. In contrast, BG infants received a significant portion of human milk by bottle, 22% at one month and 60% at six months. Body composition was measured at one, three, and six months using air-displacement plethysmography (Pea Pod, Life Measurement, Inc., Concord, CA). Researchers reported that 10% of NG infants and 33% of BG infants exceeded the sex specific 85<sup>th</sup> percentile weight gain velocity for the four to six month age interval; however, this difference did not reach statistical significance (p=0.12). Weight gain velocity from zero to two and two to four month intervals were equivalent between groups. While the sample size may be too small for statistically significant results, the study design is unique in that it allowed researchers to assess the contribution of bottle-feeding as a risk factor for early accelerated growth and fatness. This study is also the first published report of growth and body composition patterns in infants fed significant quantities of pumped breast milk.

A large longitudinal study, titled the Infant Feeding and Practice Study II (IFPS II), followed infants from birth to one year of age (2005-2007) and has published findings on the impact of bottle-feeding on infant growth <sup>32,33,81,82</sup>. The FDA and the CDC conducted the study collaboratively <sup>82</sup>. Data was collected through 10 postpartum surveys mailed over the first 12 months of the infant's life. The IFPS II study reported 68% of the breastfeeding mothers of infants in this youngest age group (< 4.5 months) had expressed milk, with 43% having done so occasionally and 25% on a regular schedule. The most

frequently cited reason for expressing milk was to “get breast milk for someone else to feed their infant”<sup>27,29</sup>. Limitations of this study include underrepresented ethnicities (black and Hispanic); therefore results may not be representative of the US population. Also, infant measures and behaviors were self-reported by mothers who may have reported incorrectly.

Li et al. published results from IFPS II on the impact of feeding mode and type of milk used during early infancy on self-regulation during late infancy<sup>81</sup>. Self regulation of milk intake was defined as whether or not infants emptied the milk in the bottle or cup offered to them in late infancy (six to 12 months old). Researchers hypothesized that infants (n=1250) bottle fed in early infancy, compared with direct breastfeeding, are more likely to empty the bottle or cup in late infancy. They also hypothesized that use of a bottle, not the type of milk in the bottle, was more important in limiting infants’ ability to self-regulate milk intake. Results confirmed their hypotheses; 27% of infants fed exclusively from the breast in early infancy emptied the bottle or cup in late infancy as compared to 47% of infants who were fed from both the breast and bottle, and 67% of those who were bottle fed only. Similar results were seen independent of milk type.

Li et al. published a separate article on rapid infant weight gain from the IFPS II (n= 1899)<sup>32</sup>. The purpose was to compare infant weight gain by both milk type (human vs. nonhuman milk) and feeding mode (breast vs. bottle). Researchers hypothesized that bottle-fed infants (regardless of milk type) would gain weight more rapidly than those fed at the breast during the first year. Results of the study supported the hypothesis that infants fed nonhuman milk only or human milk by bottle only, gained 71 g (p = 0.001) or

89 g ( $p = 0.02$ ) more per month, respectively, when compared with infants fed directly at the breast. In addition, among infants fed human milk only by both bottle and breast, monthly weight gain increased from 729 g when few feedings were by bottle, to 780 g when most feedings were by bottle. However, researchers did not state whether this association was significant or not. To summarize, weight gain of infants was negatively associated with proportion of feedings directly at the breast, but positively associated with proportion of bottle-feedings among those who received mostly human milk. Li et al. concluded that bottle-feeding is distinct from feeding at the breast in its effect on infant weight gain.

Another article on the IFPS II investigated the association that bottle-emptying behaviors in early infancy has on risk of excess weight in late infancy ( $n=1896$ )<sup>33</sup>. Researchers hypothesized that infants who often empty bottles, or are encouraged by mothers to empty bottles, will be at an increased risk for excess weight gain in late infancy. Infant initiated bottle emptying and mother encouragement of bottle emptying were measured through mother's response to questions on a Likert scale. Researchers found that regardless of bottle contents, infants who often emptied their bottles in early infancy had increased odds of having excess weight in late infancy compared to those who rarely emptied their bottles. Strangely, they also found that maternal encouragement of bottle emptying was negatively associated with infants' risk for excess weight. Li et al. hypothesized that this may be because mothers who perceive (perhaps correctly) their child to be small for their age may be more likely to encourage bottle emptying. This



particular study was limited because bottle-emptying measures did not capture how much was in a typical bottle of formula or pumped milk.

A retrospective study by DiSantis et al. evaluated the association between direct breastfeeding compared to bottle-feeding and subsequent child appetite regulation behaviors and growth<sup>83</sup>. In this study, 109 children (three to six years of age) were retrospectively classified as directly breastfed, bottle-fed human milk, or bottle-fed formula in the first three months of life. Results from the Child Eating Behavior Questionnaire allowed researchers to evaluate three constructs related to appetite regulation that are associated with obesity risk: satiety response, food responsiveness, and enjoyment of food. Children fed human milk in a bottle were 67% less likely to have high satiety responsiveness compared to directly breastfed children. There was no association of bottle-feeding (either human milk or formula) to young children's food responsiveness or enjoyment of food. Weight status and growth trends from six to 36 months were also examined, but there was no association between direct breastfeeding and current weight status or a clear difference between directly breastfed and bottle-fed children. More rapid infant changes in weight-for-age score were associated with lower satiety responsiveness, higher food responsiveness and higher enjoyment of food in later childhood.

In summary, there are very few studies that investigate the impact of bottle-feeding human milk as a potential mechanism contributing to rapid infant weight gain. Bartok et al.'s small preliminary study showed that infants bottle fed human milk were more likely to experience rapid growth at four to six months than those that were nursed

at the breast only<sup>31</sup>. While this study was well designed, a larger sample size may have been necessary for the results to reach statistical significance. The IFPS II study, a large cohort study revealed infants fed directly at the breast are less likely to exhibit bottle-emptying behavior in late infancy (self-regulation). In addition, analysis of IFPS II data indicated a negative association between weight gain and proportion of feedings directly at the breast and a positive association of weight gain with proportion of human milk bottle-feedings. Lastly, researchers found that regardless of bottle contents, infants who often emptied their bottles in early infancy had increased odds of having excess weight in late infancy compared to those who rarely emptied their bottles.

Disantis et al.'s study showed that infants fed human milk by bottle had lower satiety scores, but there were no differences among groups concerning growth. These findings are limited by a small sample size and retrospective design relying on mother's recall of feeding type. Further research addressing these gaps in the current research available is necessary to elucidate the relationship between bottle-feeding and infant growth

CHAPTER III  
ARTICLE FOR PUBLICATION

Rates of childhood obesity tripled from 1980 to 2004<sup>1</sup>. The most recent National Health and Nutrition Examination Survey (2011-2012 NHANES) reported that approximately 8% of infants and toddlers from birth to two years of age had a high weight-for-recumbent length ( $\geq 95^{\text{th}}$  percentile). Approximately 17% of children and adolescents ages two to 19 years were obese ( $\geq 95^{\text{th}}$  percentile)<sup>2</sup>. The negative health and economic consequences of childhood obesity have made prevention of childhood obesity an utmost concern to the United States (3-10). Recent studies have found that infants who grow more rapidly in infancy are more likely to be overweight or obese in childhood<sup>12,13</sup>. For example a study by Koontz et al found that more total rapid weight gain from zero to four months led to a two-folds odds ratio (1.98, 95% CI 1.05-3.74, p= 0.04) of overweight or obesity ( $\geq 85^{\text{th}}$  percentile) at six to 11 years of age.

The relationship between rapid infant weight gain and childhood obesity suggests that prevention of childhood obesity could begin as early as infancy<sup>12,13</sup>. Many potential contributors to rapid infant weight gain have been suggested in previous research studies, including macronutrient differences between formula and human milk, bioactive components found in human milk (but not formula), and time of introduction of complementary foods (13-20). The recent IFPS II study found that mothers with infants less than four and a half months old are feeding infants a significant amount of pumped breast milk, with 68% ever pumping milk and 25% pumping milk regularly<sup>27</sup>. With a

significant number of mothers feeding infants pumped human milk in a bottle, it is important to investigate the relationship between bottle-feeding and growth. It is hypothesized that bottle feeding could impact infant growth through disruption of infant self-regulation. Mothers of breast fed infants may be more aware of infants' satiety cues and less concerned with the amount of milk an infant is consuming since they cannot physically see it; while mothers taking the time to pump and express milk may be more likely to encourage infants to finish the bottle and unknowingly disrupt the infant's self-regulation mechanism. Lastly, the physiological mechanism of feeding is different between breast and bottle; bottle fed infants do less work to get milk so they may be more likely to drink a larger volume.

The mode of infant feeding has only recently begun to be investigated as a potential contributor to rapid infant weight gain. Only two studies have published results. A small pilot study indicated that infants that were predominately fed at breast and bottle grew similarly, but infants in the bottle fed group were more likely to exceed the 85<sup>th</sup> percentile for weight gain velocity between four and six months of age ( $p=0.12$ )<sup>31</sup>. IFPS II study reported that infants fed human milk by bottle gained more weight per month when compared to breast fed infants ( $p=0.02$ )<sup>32</sup>. They also found that infants that often emptied the bottle in early infancy were more likely to have excess weight gain in late infancy<sup>33</sup>.

In our study we observed infants fed human milk predominately at the breast or with the bottle. This allowed us to investigate the relationship that mode of feeding has on infant growth. The purpose of the study was to determine if infants fed human milk

directly from the breast differed in growth and adiposity measurements compared to those fed human milk from the bottle during the first six months of life. We also considered other variables that may influence infant growth in the first six months of life. We evaluated infant bottle-emptying behavior and timing of introduction to complementary foods and how they related to infant growth and adiposity during the first six months of life.

## **Methods**

### ***Sample***

Sample size was estimated to be 64 participants per group, based on an a priori analysis with an effect size of 0.5 and power of 0.8. Participants were recruited by distributing flyers in local community centers and pediatricians' offices. Researchers also made presentations to women in childbirth and infant feeding classes at Cone Health – Women's Hospital Education Center. Researchers distributed flyers to each mother in the class as well as provided a brief description of the study, its purpose, and benefits. The flyer contained the contact information of the primary investigator (PI). This study also used snowball recruiting. Participants referred friends who were interested in the study. Participants could also post an electronic version of the flyer on their Facebook page. See Appendix A for flyer.

Screening questions were asked by the PI to ensure eligibility of the mother and her infant. Infants were required to be singletons, born at or after 35 weeks of gestation, weigh at least 5.5 pounds (thus excluding low birth weight infants), and not have any serious medical conditions that would impact growth (endocrine disorders, down

syndrome, cerebral palsy, cystic fibrosis, infections, heart defects, metabolic disorders, etc.). Mothers were required to be 18 years of age or older, English speaking, have no long-term medical conditions, and planned to feed their infant primarily human milk (< 4 oz of formula/day). This study was approved by the Institutional Review Board at University of North Carolina at Greensboro (UNCG) and all participants gave written, informed consent. See Appendix B for consent form. Information on demographics, health of the mother and infant, employment and childcare were collected by questionnaires. See Appendix C.

### ***Research Design***

The study design consisted of direct anthropometric measurements and questionnaires. Home visits were scheduled at the participant's convenience by phone or email. The participants were given the option to come to the Human Nutrition Laboratory if preferred. There were a total of four home visits: neonatal (less than two months), two months old, four months old, and six months old. At the neonatal home visit, the PI, obtained consent from the mother and provided her the first infant feeding questionnaire. At the two, four, and six month home visits, a pair of researchers completed the anthropometric measurements with the mother and infant and collected the completed questionnaires from the mother. Home visits were scheduled within plus or minus one week of the infant's monthly "birthday." At these visits, researchers measured the following indices: infant's weight, length, and skinfold thickness.

Mother's were asked to complete six postnatal questionnaires on infant feeding (see Appendix C). Each questionnaire took approximately 20 minutes to complete. The

neonatal questionnaire was completed after consent at the first home visit. The five remaining questionnaires were mailed or given to the mother at home visits when the infant was two months, three months, four months, five months, and six months old. The questionnaires were mailed with a stamped return envelope. For infants recruited at two months old, the first and second month visits were combined.

Participants received up to four small gifts for their participation in the study. One gift was given after each home visit. The gifts included small family or baby items such as blankets, hats, bibs, or books. The mother also received a booklet of her infant's growth measurements upon completion of the study.

Participants were categorized into one of two groups based on reported feeding mode at three months of age: Nursing Group (NG), infants fed predominantly at the breast with less than 25 percent of the feeds from a bottle and Bottle Feeding Human Milk Group (BG), infants fed human milk from the bottle more than 25 percent of the feeds. All infants were fed human milk only. Occasional bottles of formula (< 4 oz/day) were allowed.

### ***Infant Feeding***

To determine infant feeding practices, questionnaires were adapted from the IFPS II <sup>82</sup>. They included detailed questions on infant feeding, breastfeeding, pumping and expressing milk, termination of breastfeeding, and infant formula. See Appendix C for questionnaires. Questions on infant feeding included age at introduction to complementary foods. In addition, a Likert scale was used to assess bottle-emptying behavior: "how often does your baby drink all of his cup or bottle of pumped milk?"

Mothers that responded “never,” “rarely,” or “sometimes” were categorized as low emptying. Those that responded “most of the time” or “always” were considered high emptying. In addition mothers reported the total volume of milk in the bottle.

### *Anthropometrics*

Anthropometrics of the infant as well as the mother were measured at the two month, four month, and six month home visits. Mothers reported infant weight and length at birth. Measurements included mother’s height, weight and waist circumference and infant’s weight, length, and skinfold thickness. Procedures followed the WHO standard techniques<sup>84,85</sup>. The PI was trained by C. Lovelady. Harpenden calipers were used for the skinfold measurement. Every effort was made to minimize discomfort. Researchers grasped skin gently and performed measurements quickly, stopping if the infant cried excessively or at the mother’s request. The PI performed all skinfold measurements for consistency and reliability.

Nude weight of infants was measured to the nearest gram using a calibrated high-precision pediatric scale (Seca Medical Sales, Hamburg, Germany). Recumbent length of infants (diaper allowed) was measured to the nearest 1 mm using an infant measuring board (Perspective Enterprises, Portage, MI). One researcher held the infant’s head in contact with the headpiece in the Frankfort horizontal plane and the other aligned the infant’s trunk and legs, extended both legs and brought the foot piece firmly against the heel. Mothers weight was measured using a calibrated digital adult scale (Tanita BWB-800S, Arlington Heights, IL) and height was measured using a portable stadiometer. Mothers were weighed in light clothing without shoes. A Gulick tape was used to



measure mother's waist circumference. The same equipment was used during all home visits including mothers and infants that opted for the visit to be at the Human Nutrition Lab rather than her home.

Each measurement was duplicated for accuracy and a third measurement was taken if the first two measurements were discordant by more than 3%. Weight-for-length, subscapular and tricep skinfold thickness, and weight velocity data was compared to the WHO standardized growth charts<sup>86</sup>. See Appendix D for anthropometric procedures.

### ***Statistical Analysis***

Data was analyzed utilizing the Statistical Package for Social Sciences (SPSS version 22). Differences between baseline characteristics and growth data were assessed using the Independent Student T-Test to determine statistical differences between the two groups (NG, BG). Weight velocity data was assessed using Fisher's Exact Test to determine differences in the percentage of infants in NG and BG experiencing accelerated weight gain.

The three main anthropometric outcomes included BMI, weight velocity, and tricep skinfold thickness. BMI and tricep skinfold thickness were entered into the WHO Anthro program for analysis and calculation of age and sex specific z-scores. Weight velocity for each two-month interval (zero to two, two to four, and four to six) was compared to the age and sex specific WHO charts<sup>86</sup>. For the purposes of this study accelerated weight gain was defined as exceeding the 75<sup>th</sup> percentile (i.e. the top quartile) for sex-specific weight gain during the two-month interval between two and four and four and six months.

## **Results**

### ***Participants***

Of the 27 mother-infant pairs that were recruited two pairs were removed from the final sample. One pair dropped out due to difficulty of completing study requirements. The other pair's data was eliminated because feeding mode transitioned to fully formula feeding at three months of age. The characteristics of mothers and infants are summarized in Table 1.

**Table 1. Maternal and Infant Characteristics**

	<b>Nursing Group n=15</b>	<b>Bottle-feeding Group n=10</b>
<b>Maternal Characteristics</b>		
Age (yr)	32.2 ± 3.5	32.4 ± 2.1
Education (% with college or greater)	100	100
Household Income (% earning > \$60,000/yr)	73	100
Smoking (%)	0	0
Employment at 3 months (%)		
<b>Full time (&gt; 30 hr/wk)*</b>	20	80
<b>Part time (&lt; 30 hr/wk)*</b>	67	20
Not working (0 hr/wk)	13	0
<b>Infant Characteristics</b>		
Gender		
Males	7	5
Females	8	5
Ethnicity/Race		
White	12	8
Black	1	0
Hispanic	0	1
Other	2	1
Birth Weight (g)	3641 ± 570	3445 ± 439
Birth Length (cm)	52.1 ± 2.3	52.4 ± 1.2

\*Significantly different between groups,  $p < 0.02$

### ***Feeding Mode***

Each month, mothers reported infant feeding practices during the past seven days. They were asked the total number of human milk feedings per day (included direct breast feeds and bottle feeds). In addition, they were asked the total number of times infants received human milk in a bottle over the past seven days. Mother infant pairs were

grouped based on reported feeding mode at three months of age as previously described in the methods section. Fifteen infant mother pairs were categorized as NG (< 25% of feeds by bottle) and 10 were categorized as BG ( $\geq$  25% of feeds by bottle). Each month NG infants were fed more bottles per day on average compared to the BG infants; however, the difference between groups was not statistically significant.

**Table 2. Average Frequency of Feedings per Day by Month**

	<b>Nursing Group n=15</b>	<b>Bottle Feeding Group n=10</b>
<b>1 month</b>	10.7	10.0
<b>2 month</b>	8.4	7.8
<b>3 month</b>	7.9	7.0
<b>4 month</b>	7.7	6.8
<b>5 month</b>	7.6	7.2
<b>6 month</b>	7.2	6.6

No significant differences between groups

Breastfeeding intensity during the first six months was also determined. It was defined as the total percent of feeds fed directly at the breast from zero to six months of age. To determine breastfeeding intensity, the total number of human milk feedings per day from zero to six months was summed. Similarly, the total human milk bottle feedings from zero to six months was summed. The number of total direct breastfeeds per day from zero to six months was determined by subtracting the human milk feedings by bottle per day from the total human milk feedings per day. Then the total number of direct breast feeds per day from zero to six months was divided by the total number of feedings (including formula, direct breast feeds, and human milk bottle feeds) per day from zero to

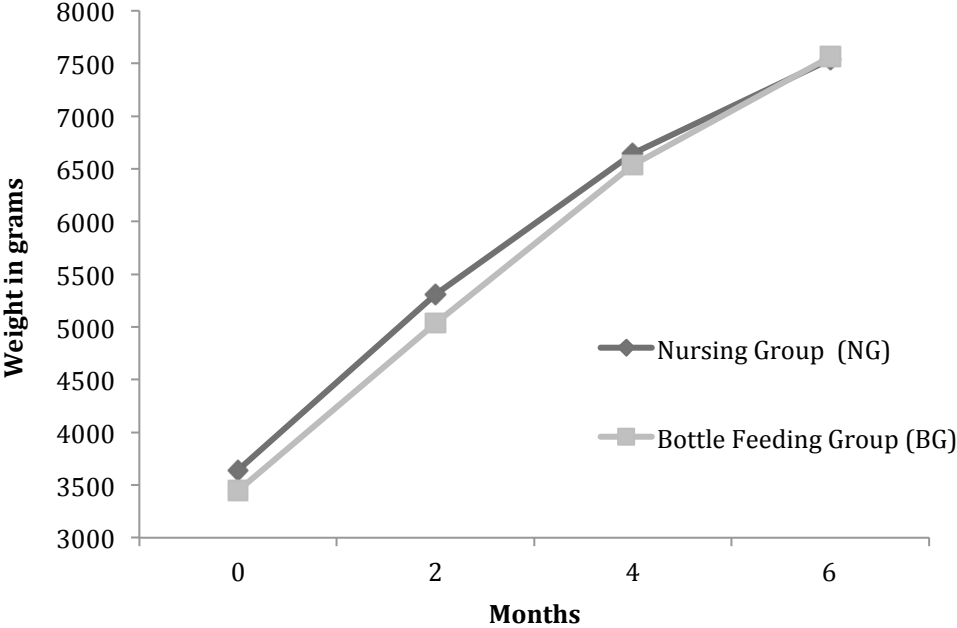
six months and multiplied by 100. On average, NG infants were fed 91 percent of feedings directly at the breast (range: 82%-100%), with BG infants 65 percent (range: 25% to 83%).

Throughout the study only two infants' diets in the study were supplemented with formula. The first infant in the BG group was given one bottle of formula per day at five and six months of age. Another infant in the BG group received one bottle of formula per day (for the night time feeding) from birth to four months of age and then had three bottles of formula per day at five and six months of age.

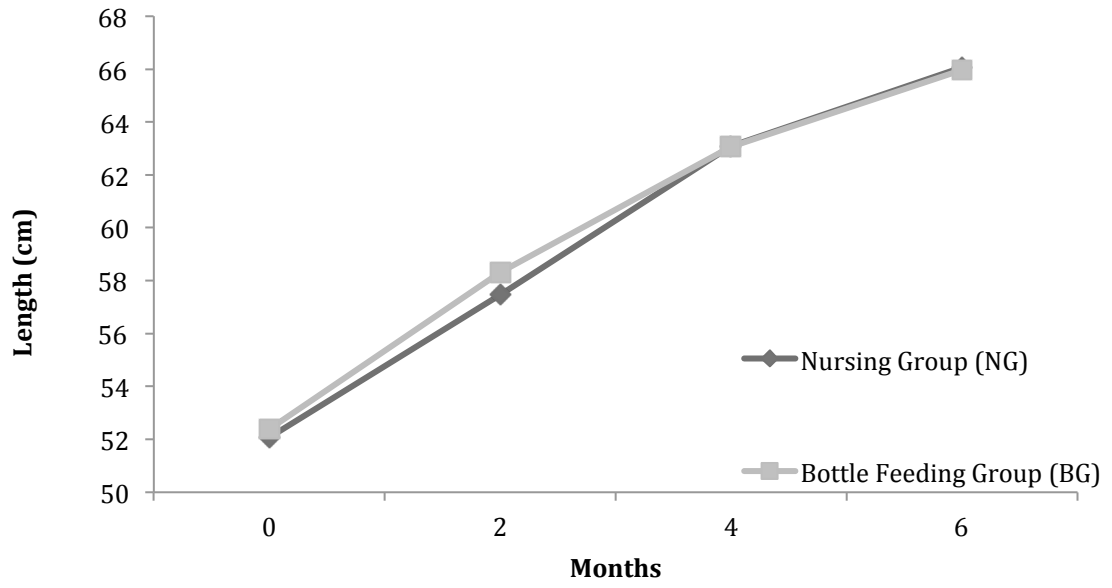
### ***Infant Growth***

Average gain in length and weight was similar in both groups. See Figures 2 and 3. Table 3 summarizes the average weight gain and weight velocity. In comparison with the WHO weight velocity charts, 30% (n=3) of BG infants and 20% (n=3) of NG infants exceeded the sex-specific 75<sup>th</sup> percentile for weight gain velocity for the two to four month increment. Between the four to six month increment 13% (n=2) of BG infants and 20% (n=2) of NG infants exceeded the sex-specific 75<sup>th</sup> percentile. Change in BMI z-scores between two to four months were statistically different between groups, with BG infants having a greater change in growth (p=0.034). However, the change BMI z-scores between groups was no longer significant between the four and six month period. See Table 4. Infant subscapular and tricep skinfold thickness measurements and z-scores did not differ significantly between groups at any age. See Tables 4 and 5.

**Figure 2. Weight of Infants by Month**



**Figure 3. Length of Infants by Month**



**Table 3. Average Infant Weight Gain and Number of Infants Exceeding the 75<sup>th</sup> Percentile for Weight Velocity by Month**

	<b>Nursing Group n=15</b>	<b>Bottle Feeding Group n=10</b>
<b>Average Weight Gain (g)</b>		
0 – 2 months	1667 ± 478	1592 ± 354
2 – 4 months	1335 ± 315	1501 ± 288
4 – 6 months	892 ± 309	1026 ± 430
0 – 6 months	3895 ± 697	4119 ± 730
<b>Exceeded the 75<sup>th</sup> Percentile Weight Gain Velocity</b>		
0 – 2 months	2 (13%)	0 (0%)
2 – 4 months	3 (20%)	3 (30%)
4 – 6 months	2 (13%)	3 (30%)
0 – 6 months	0 (0%)	2 (20%)

No significant differences between groups



**Table 4. Infant BMI Z-score and Change in BMI Z-score by Month**

	<b>Nursing Group n=15</b>	<b>Bottle Feeding Group n=10</b>
<b>BMI z-score</b>		
0 months	-0.07 ± 1.29	-0.76 ± 1.37
2 months	-0.07 ± 1.14	-0.91 ± 1.18
4 months	-0.23 ± 0.79	-0.34 ± 0.78
6 months	0.10 ± 0.78	0.14 ± 0.77
<b>Change in BMI z-score</b>		
0 – 2 months	-0.001 ± 1.39	-0.14 ± 1.42
2 – 4 months*	-0.16 ± 0.62	0.56 ± 0.99
4 – 6 months	0.33 ± 0.62	0.48 ± 0.68
0 – 6 months	0.17 ± 1.21	0.90 ± 1.71

\*Significantly different between groups, p = 0.03

**Table 5. Tricep and Subscapular Skinfold Thickness by Month Compared to the WHO Standards**

	Nursing Group n=15		Bottle Feeding Group n=10		WHO 50 <sup>th</sup> percentile	
	Male	Female	Male	Female	Male	Female
<b>Tricep (mm)</b>						
2 months	8.9 ± 1.0	9.4 ± 1.5	9.6 ± 0.6	9.2 ± 1.9	-----	-----
4 months	10.2 ± 1.5	10.3 ± 1.8	9.8 ± 1.5	12.2 ± 1.7	9.6	9.6
6 months*	11.0 ± 1.7	11.0 ± 2.3	11.0 ± 1.6	12.6 ± 1.9	9.2	9.1
<b>Subscapular (mm)</b>						
2 months	7.9 ± 1.1	8.3 ± 1.3	7.7 ± 1.5	7.9 ± 1.3	-----	-----
4 months	8.3 ± 1.1	8.3 ± 1.6	7.5 ± 1.0	8.3 ± 1.2	7.5	7.5
6 months*	8.8 ± 0.7	8.3 ± 1.6	9.0 ± 1.2	8.4 ± 1.3	7.2	7.2

No significant differences between groups

**Table 6. Tricep and Subscapular Skinfold Thickness Z-score by Month Compared to the WHO Standards**

	Nursing Group n=15	Bottle Feeding Group n=10
<b>Tricep z-score</b>		
4 months	0.32 ± 0.90	0.70 ± 1.03
6 months*	0.91 ± 1.00	1.28 ± 0.82
<b>Subscapular z-score</b>		
4 months	0.47 ± 0.88	0.19 ± 0.82
6 months*	0.92 ± 0.85	0.92 ± 0.73

No significant differences between groups

### ***Bottle Emptying Behavior***

Bottle-emptying behavior of infants in the BG group from zero to six months of age are summarized in Table 7. For each month the majority of BG mothers reported that infants emptied the bottle “most of the time” or “always.” None of the time points allowed for statistical comparison between the bottle-emptying behaviors on growth due to the small number of infants in each group. Most mothers filled bottles with three to four ounces of human milk per feeding. Only at five months old were some bottles filled with seven to eight ounces of human milk per feeding. See Table 8.

**Table 7. Bottle Emptying Behavior of BG Infants**

	<b>2 months</b>	<b>3 months</b>	<b>4 months</b>	<b>5 months</b>	<b>6 months*</b>
High Bottle Emptying	6	10	8	9	9
Low Bottle Emptying	4	0	2	1	0

\*Six month data does not total to 10 because one infant was not bottle fed due to winter vacation

**Table 8. Volume of Milk in Bottles Fed to Infants by Month\***

	2 months	3 months	4 months	5 months	6 months
1 – 2 ounces	1	1	0	0	0
3 – 4 ounces	6	6	6	6	6
5 – 6 ounces	1	2	3	1	2
7 – 8 ounces	0	0	0	2	0

\*Numbers do not add to 10 due to missing data or infants that had not received bottles before 3 months of age

### ***Complementary Feeding***

No infants were introduced to complementary foods before 4 months of age. One infant was introduced to complementary foods at four months of age, 11 at five months of age, and six at six months of age. Seven infants had not been introduced to foods by the six month questionnaire.

### **Discussion**

Infant weight and length gain did not differ significantly at any age interval (Figure 2, 3, and Table 3). Weight gains were higher for BG infants than NG infants from two to four months, four to six months, and from zero to six months; however, the values were not statistically significant. These results are similar to the study by Bartok<sup>31</sup> which found that infants in the nursing group were significantly longer than the bottle feeding human milk infants, however, other than this difference infants grew similarly. However, IFPS II study found that infants fed human milk by bottle grew 89 grams more per month

than infants fed at the breast ( $p=0.02$ )<sup>32</sup>. Their larger sample size ( $n=1899$ ) may have contributed to adequate power necessary to detect a significant difference with this small effect.

While average weight and length measurements were not different, change in BMI z-scores (which account for infant gender) from two and four months were significantly different between groups. BG infants grew more rapidly than NG infants during this time point. However, during the age intervals zero to two months and four to six months this relationship was not significant. Differences between zero to two months may not have been seen because infant feeding modes did not differ greatly until most mothers returned to work between two and three months post partum. At four to six months NG infants had lower change in BMI z-scores when compared with BG infants, but the result was not longer significant with a p value of 0.2. This could be because of our small sample size. Bartok's study<sup>31</sup> did not observe differences between BMI z-scores between two and four months. Bartok did observe a lower BMI z score at one and two months, which she noted was due to nursing infants being longer than bottle feeding human milk infants at one and two months. Other differences were not observed<sup>31</sup>. The IFPS II did not report BMI or BMI z-scores for infants<sup>82</sup>.

Weight gain velocity of infants was compared to the WHO standards. There was no difference between groups at any age of infants exceeding the 75<sup>th</sup> percentile. This differed from the Bartok study which found that infants in the four to six month period that were bottle fed were more likely to exceed the 85<sup>th</sup> percentile compared to nursing infants ( $p$  value=0.12)<sup>31</sup>. While the p value of 0.12 was not significant it was

approaching significance, which suggests that if the sample was larger the effect may become significant. It is also possible that the effect of bottle feeding human milk may just be too small to see a significant difference.

There were no significant differences between body composition measurements at any age. This finding is similar to the study by Bartok that measured body composition using air-displacement plethysmography (Pea Pod, Life Measurement, Inc., Concord, CA) monthly from zero to six months<sup>31,87</sup>. While a different methodology was used, both are validated techniques for collecting data on body composition and similar results were observed<sup>87,88</sup>. Infant body composition in both BG and NG infants did not differ. Even when examining z-scores while controlling for gender, significant differences between were not observed. This may be because the sample sizes of both studies were too small to see an effect and also infants were only followed for six months. Analysis for a longer period of time, for 12 or 24 months may have resulted in body composition differences between groups.

The majority of BG mothers reported that infants finished the bottle “most of the time” or “always,” exhibiting high bottle emptying behavior. This was unlike the IFPS II which found two distinct groups of infants with high and low bottle emptying behavior<sup>81</sup>. This was most likely due to their large sample size (n= 1250). The IFPS II compared infant feeding mode in early infancy (direct breast feeding, bottle and breastfeeding, and only bottle feeding) to bottle emptying behavior and growth in late infancy. They found that infants fed by bottle in early infancy were more likely to empty the bottle in late infancy. In addition comparing only bottle fed infants those that often emptied the bottle

were 69% more likely to have excess weight gain in late infancy compared to those that rarely emptied the bottle<sup>33</sup>. The IFPSI II study found that this relationship was seen regardless of the contents of the bottle. Their findings lend support the theory that bottle feeding may disrupt infant self-regulation. Our study sample needed to be larger and follow infants for a longer period of time in order to observe both low and high bottle emptying behavior and its subsequent effect. Following infants for longer a longer period of time would have allowed a comparison between early and late infancy.

Unlike the IFPS II study we did ask mothers about the volume of milk fed to infants. Another reason infants emptied bottles “most of the time” or “always” could be because mothers kept bottle contents low. The majority of mothers reported filling bottles between three to four ounces from two to six months (Table 8). Thus, it is possible that mothers may have been trying to avoid wasting pumped breast milk by filling bottles less rather than encouraging infants to finish fuller bottles.

The mothers in the current study were very similar in demographics and education to those in the Bartok study<sup>31</sup>. The majority of mothers were highly educated, Caucasian, with household incomes greater than \$60,000 annually. This may be why most mothers continued to breastfeed for sixth months and did not feed complementary food before four months of age which are trends observed in similar populations in previous studies<sup>34</sup>. Our sample was homogenous and therefore does not represent a broader population of mother-infant dyads.

The NG group received an average of 91% of human milk feeds at the breast, while the infants in the BG group received approximately 65% of their human milk

feedings at the breast. To see significant differences in growth, perhaps the difference in breastfeeding intensity needs to be greater between the two groups. Similar amounts were reported in Bartok's study with infants in the predominately nursing group received 98% of milk at the breast and infants in the bottle feeding human milk group received 22% from the bottle at one month and more than 60% at six months<sup>31</sup>. Future studies with larger samples might divide groups similarly to the IFPS II study that looked at infants fed at the breast, breast and bottle, and fed by bottle only.

### **Conclusion**

This study did not find evidence that bottle feeding acts as an independent factor associated with rapid weight gain of infants. The strengths of the study include its design and direct anthropometric measurement of infants. But it is limited in power due to the small sample size. Results indicate that infants in both groups grew similarly in weight, length, and skinfold thickness, except for the greater change in BMI z-score of infants in the BG group from two to four months. However, this effect did not continue from four to six months of age. It may be that the effect of bottle feeding on infant growth may be very small. Composition of milk may represent a bigger influence on infant growth when compared to mode of milk delivery. If this argument is supported in future research, it may be good news for working mothers trying to follow the current breastfeeding recommendations. However, a follow up study for a longer time period with a larger sample size is necessary to fully investigate the relationship of bottle-feeding with human milk and infant growth.



## CHAPTER IV

### EPILOGUE

This study did not find evidence that bottle feeding acts as an independent factor associated with weight gain of infants. The strengths of the study include its design and direct measurements of infants. It is limited by low power due to the small sample size. Results indicate that infants in both groups grew similarly in weight, length, and skinfold thickness, except for the greater change in BMI z-score of infants in the BG group from two to four months of age. However, this effect did not continue from four to six months of age. It may be that the effect of bottle feeding on infant growth may be very small and difficult to detect.

Recruitment for this study was slow and limited to only six months. I believe that this may be because mothers with young infants are very busy caring for their infants and also often work outside the home and have other children. This leaves little time for mothers to participate in studies. In addition, the incentive to participate included a summary of infant growth and small gifts of less than five dollars each for completing each home visit. Perhaps higher incentives would have encouraged a more diverse sample of mothers to participate. For example, most mothers recruited for the study were highly educated and interested in the information they would gain rather than the small baby gifts.

Our study design with home visits versus lab visits attempted to make the study as convenient for mothers as possible. Reflecting on recruitment we may have been able to include some visits in activities that mothers were already doing. For example, several mothers in our study attended a weekly breastfeeding support group. With IRB approval we may have been able to allow the option for monthly visits to be held at this location.

Ideally we should have recruited numbers closer to the 64 per group recommended by the a priori analysis. In the future, greater incentives, such as gift cards for participants to encourage more mothers to participate should be considered. By recruiting more mothers and also recruiting from Women Infants and Children (WIC), a more representative sample of mothers and infants could have been recruited, including low socioeconomic status, multiple ethnic groups, and lower educated participants. Lastly, a larger sample would hopefully also allow analysis of growth of more types of infant feeding practices including not only direct breastfeeding and bottle feeding human milk, but also formula and infants fed a mix of formula and human milk.

Infants were only followed for the first six months of life. In a future study, infants should be followed for twelve to twenty four months. In early infancy feeding habits are just being established and growth differences may not appear until later in infancy. I would also like to include questions on mother recognition of satiety cues in infants. The question adapted from the IFPS II study that we utilized to measure mother encouragement of infant feeding seemed to be confusing to mothers. Mothers sometimes inquired about the word “encouragement” as used in the question “How often is your baby encouraged to finish a bottle if he or she stops drinking before the pumped breast

milk is gone?” The response options included: never, rarely, sometimes, most of the time, or always. Mothers were not sure what was meant by “encouragement” and therefore could not accurately answer the question. In the future I would suggest defining mother encouragement by defining encouragement behaviors. For example, asking mothers the number of times they reintroduce the bottle or about recognition of satiety cues like turning head away or the sucking rate slowing.

The results of this study and similar future studies could help elucidate whether mode of infant feeding significantly impacts rapid infant weight. This knowledge would be helpful because it could impact infant feeding recommendations to prevent rapid infant weight gain and future overweight and obesity and thus the risk factors that accompany it. However, if the growth measures of infants fed by different modes are not significant it may provide more support for bottle-feeding pumped milk as an option for working mothers instead of formula.

While I had previous knowledge about research conducting the Feeding and Infant Growth study allowed me to learn about the intricacies of conducting a longitudinal observational study. Before beginning I carefully planned each phase of the study. However, when I began to conduct the research I realized that my plan would require constant re-analysis, and adjustment for issues. For example, I had originally planned to include a formula and a mixed feeding group, but I was unable to recruit any mothers interested in the study that planned to feed their infant formula. This changed the outlook of the study. Also, recruitment was slow and I had to be creative and think of new ways to recruit participants. Developing good relationships with current participants

and asking them to share flyers with friends was the most effective strategy. Overall, I believe this experience has expanded my development as a researcher and as a future dietitian.

## REFERENCES

1. Ogden CL, Carroll MD, Curtin LR, McDowell MA, Tabak CJ, Flegal KM. Prevalence of overweight and obesity in the United States, 1999-2004. *JAMA*. 2006;295(13):1549-1555.
2. Ogden CL, Carroll MD, Kit BK, Flegal KM. Prevalence of obesity and trends in body mass index among US children and adolescents, 1999-2010. *JAMA*. 2012;307(5):483-490.
3. Barlow SE. Expert committee recommendations regarding the prevention, assessment, and treatment of child and adolescent overweight and obesity: summary report. *Pediatrics*. Vol 120 Suppl 4. United States 2007:S164-192.
4. Clarke WR, Woolson RF, Lauer RM. Changes in ponderosity and blood pressure in childhood: the Muscatine Study. *Am J Epidemiol*. 1986;124(2):195-206.
5. Freedman DS, Dietz WH, Srinivasan SR, Berenson GS. The relation of overweight to cardiovascular risk factors among children and adolescents: the Bogalusa Heart Study. *Pediatrics*. 1999;103(6 Pt 1):1175-1182.
6. Gidding SS, Bao W, Srinivasan SR, Berenson GS. Effects of secular trends in obesity on coronary risk factors in children: the Bogalusa Heart Study. *J Pediatr*. 1995;127(6):868-874.
7. Freedman DS, Srinivasan SR, Harsha DW, Webber LS, Berenson GS. Relation of body fat patterning to lipid and lipoprotein concentrations in children and adolescents: the Bogalusa Heart Study. *Am J Clin Nutr*. 1989;50(5):930-939.
8. Steinberger J, Moorehead C, Katch V, Rocchini AP. Relationship between insulin resistance and abnormal lipid profile in obese adolescents. *J Pediatr*. 1995;126(5 Pt 1):690-695.
9. Finkelstein EA, Trogon JG, Cohen JW, Dietz W. Annual medical spending attributable to obesity: payer- and service-specific estimates. *Health Aff (Millwood)*. 2009;28(5):w822-831.

10. Krebs NF, Jacobson MS. Prevention of pediatric overweight and obesity. *Pediatrics*. 2003;112(2):424-430.
11. Healthy People 2020 [Internet]. Washington, D.C. US Department of Health and Human Services, Office of Disease Prevention and Health Promotion <http://www.healthypeople.gov/2020/data-search>
12. Druet C, Stettler N, Sharp S, et al. Prediction of childhood obesity by infancy weight gain: an individual-level meta-analysis. *Paediatr Perinat Epidemiol*. 2012;26(1):19-26.
13. Koontz MB, Gunzler DD, Presley L, Catalano PM. Longitudinal changes in infant body composition: association with childhood obesity. *Pediatr Obes*. 2014;9(6):e141-144.
14. Doulla M, McIntyre AD, Hegele RA, Gallego PH. A novel MC4R mutation associated with childhood-onset obesity: A case report. *Paediatr Child Health*. 2014;19(10):515-518.
15. Lv D, Zhang DD, Wang H, et al. Genetic variations in SEC16B, MC4R, MAP2K5 and KCTD15 were associated with childhood obesity and interacted with dietary behaviors in Chinese school-age population. *Gene*. 2015.
16. Qi Q, Downer MK, Kilpelainen TO, et al. Dietary intake, FTO genetic variants and adiposity: a combined analysis of over 16,000 children and adolescents. *Diabetes*. 2015.
17. Zhang M, Zhao X, Xi B, et al. [Impact of obesity-related gene polymorphism on risk of obesity and metabolic disorder in childhood]. *Zhonghua Yu Fang Yi Xue Za Zhi*. 2014;48(9):776-783.
18. Hester SN, Hustead DS, Mackey AD, Singhal A, Marriage BJ. Is the macronutrient intake of formula-fed infants greater than breast-fed infants in early infancy? *J Nutr Metab*. 2012;2012:891201.
19. Escribano J, Luque V, Ferre N, et al. Effect of protein intake and weight gain velocity on body fat mass at 6 months of age: the EU Childhood Obesity Programme. *Int J Obes (Lond)*. 2012;36(4):548-553.
20. Koletzko B, von Kries R, Closa R, et al. Lower protein in infant formula is associated with lower weight up to age 2 y: a randomized clinical trial. *Am J Clin Nutr*. 2009;89(6):1836-1845.

21. Miralles O, Sanchez J, Palou A, Pico C. A physiological role of breast milk leptin in body weight control in developing infants. *Obesity (Silver Spring)*. 2006;14(8):1371-1377.
22. Savino F, Benetti S, Liguori SA, Sorrenti M, Cordero Di Montezemolo L. Advances on human milk hormones and protection against obesity. *Cell Mol Biol (Noisy-le-grand)*. 2013;59(1):89-98.
23. Thompson AL. Developmental origins of obesity: early feeding environments, infant growth, and the intestinal microbiome. *Am J Hum Biol*. 2012;24(3):350-360.
24. Harder T, Bergmann R, Kallischnigg G, Plagemann A. Duration of breastfeeding and risk of overweight: a meta-analysis. *Am J Epidemiol*. 2005;162(5):397-403.
25. Arenz S, Ruckerl R, Koletzko B, von Kries R. Breast-feeding and childhood obesity--a systematic review. *Int J Obes Relat Metab Disord*. 2004;28(10):1247-1256.
26. Owen CG, Martin RM, Whincup PH, Smith GD, Cook DG. Effect of infant feeding on the risk of obesity across the life course: a quantitative review of published evidence. *Pediatrics*. 2005;115(5):1367-1377.
27. Labiner-Wolfe J, Fein SB, Shealy KR, Wang C. Prevalence of breast milk expression and associated factors. *Pediatrics*. 2008;122 Suppl 2:S63-68.
28. Geraghty SR, Khoury JC, Kalkwarf HJ. Human milk pumping rates of mothers of singletons and mothers of multiples. *J Hum Lact*. Vol 21. United States 2005:413-420.
29. Geraghty SR, Rasmussen KM. Redefining "breastfeeding" initiation and duration in the age of breastmilk pumping. *Breastfeed Med*. 2010;5(3):135-137.
30. Mitoulas LR, Lai CT, Gurrin LC, Larsson M, Hartmann PE. Efficacy of breast milk expression using an electric breast pump. *J Hum Lact*. 2002;18(4):344-352.
31. Bartok CJ. Babies fed breastmilk by breast versus by bottle: a pilot study evaluating early growth patterns. *Breastfeed Med*. 2011;6(3):117-124.

32. Li RW, Magadia J, Fein SB, Grummer-Strawn LM. Risk of Bottle-feeding for Rapid Weight Gain During the First Year of Life. *Archives of Pediatrics & Adolescent Medicine*. 2012;166(5):431-436.
33. Li R, Fein SB, Grummer-Strawn LM. Association of breastfeeding intensity and bottle-emptying behaviors at early infancy with infants' risk for excess weight at late infancy. *Pediatrics*. 2008;122 Suppl 2:S77-84.
34. Sloan S, Gildea A, Stewart M, Sneddon H, Iwaniec D. Early weaning is related to weight and rate of weight gain in infancy. *Child Care Health Dev*. 2008;34(1):59-64.
35. Cattaneo A, Williams C, Pallas-Alonso CR, et al. ESPGHAN's 2008 recommendation for early introduction of complementary foods: how good is the evidence? *Matern Child Nutr*. 2011;7(4):335-343.
36. Martin RM, Patel R, Kramer MS, et al. Effects of promoting longer-term and exclusive breastfeeding on adiposity and insulin-like growth factor-I at age 11.5 years: a randomized trial. *JAMA*. 2013;309(10):1005-1013.
37. Pinhas-Hamiel O, Dolan LM, Daniels SR, Standiford D, Khoury PR, Zeitler P. Increased incidence of non-insulin-dependent diabetes mellitus among adolescents. *J Pediatr*. 1996;128(5 Pt 1):608-615.
38. Sinha R, Fisch G, Teague B, et al. Prevalence of impaired glucose tolerance among children and adolescents with marked obesity. *N Engl J Med*. 2002;346(11):802-810.
39. Freedman DS, Srinivasan SR, Burke GL, et al. Relation of body fat distribution to hyperinsulinemia in children and adolescents: the Bogalusa Heart Study. *Am J Clin Nutr*. 1987;46(3):403-410.
40. Rodriguez MA, Winkleby MA, Ahn D, Sundquist J, Kraemer HC. Identification of population subgroups of children and adolescents with high asthma prevalence: findings from the Third National Health and Nutrition Examination Survey. *Arch Pediatr Adolesc Med*. 2002;156(3):269-275.
41. Clinical practice guideline: diagnosis and management of childhood obstructive sleep apnea syndrome. *Pediatrics*. 2002;109(4):704-712.



42. Dietz WH, Jr., Gross WL, Kirkpatrick JA, Jr. Blount disease (tibia vara): another skeletal disorder associated with childhood obesity. *J Pediatr*. 1982;101(5):735-737.
43. Loder RT, Aronson DD, Greenfield ML. The epidemiology of bilateral slipped capital femoral epiphysis. A study of children in Michigan. *J Bone Joint Surg Am*. 1993;75(8):1141-1147.
44. Davison KK, Birch LL. Weight status, parent reaction, and self-concept in five-year-old girls. *Pediatrics*. 2001;107(1):46-53.
45. Strauss RS. Childhood obesity and self-esteem. *Pediatrics*. 2000;105(1):e15.
46. Freedman DS, Khan LK, Serdula MK, Dietz WH, Srinivasan SR, Berenson GS. The relation of childhood BMI to adult adiposity: the Bogalusa Heart Study. *Pediatrics*. 2005;115(1):22-27.
47. Ogden C, Dietz B. The childhood obesity epidemic: threats and opportunities. 2010; <http://www.cdc.gov/about/grand-rounds/archives/2010/06-June.htm> - resources. Accessed Oct 7, 2013.
48. Davison KK, Birch LL. Childhood overweight: a contextual model and recommendations for future research. *Obes Rev*. 2001;2(3):159-171.
49. Breastfeeding and the use of human milk. *Pediatrics*. 2012;129(3):e827-841.
50. American Academy of Pediatrics. Committee on Nutrition. Soy protein-based formulas: recommendations for use in infant feeding. *Pediatrics*. 1998;101(1 Pt 1):148-153.
51. Breastfeeding: Data: Report Card. Centers for Disease Control and Prevention; 2014:1-8.
52. Chapman DJ, Perez-Escamilla R. Breastfeeding among minority women: moving from risk factors to interventions. *Adv Nutr*. 2012;3(1):95-104.
53. Gillman MW, Rifas-Shiman SL, Camargo CA, Jr., et al. Risk of overweight among adolescents who were breastfed as infants. *Jama*. 2001;285(19):2461-2467.

54. Liese AD, Hirsch T, von Mutius E, Keil U, Leupold W, Weiland SK. Inverse association of overweight and breast feeding in 9 to 10-y-old children in Germany. *Int J Obes Relat Metab Disord*. 2001;25(11):1644-1650.
55. Toschke AM, Vignerova J, Lhotska L, Osancova K, Koletzko B, Von Kries R. Overweight and obesity in 6- to 14-year-old Czech children in 1991: protective effect of breast-feeding. *J Pediatr*. 2002;141(6):764-769.
56. von Kries R, Koletzko B, Sauerwald T, et al. Breast feeding and obesity: cross sectional study. *Bmj*. 1999;319(7203):147-150.
57. O'Callaghan MJ, Williams GM, Andersen MJ, Bor W, Najman JM. Prediction of obesity in children at 5 years: a cohort study. *J Paediatr Child Health*. 1997;33(4):311-316.
58. Grummer-Strawn LM, Mei Z. Does breastfeeding protect against pediatric overweight? Analysis of longitudinal data from the Centers for Disease Control and Prevention Pediatric Nutrition Surveillance System. *Pediatrics*. 2004;113(2):e81-86.
59. Bergmann KE, Bergmann RL, Von Kries R, et al. Early determinants of childhood overweight and adiposity in a birth cohort study: role of breast-feeding. *Int J Obes Relat Metab Disord*. 2003;27(2):162-172.
60. Parsons TJ, Power C, Manor O. Infant feeding and obesity through the lifecourse. *Arch Dis Child*. 2003;88(9):793-794.
61. Li L, Parsons TJ, Power C. Breast feeding and obesity in childhood: cross sectional study. *Bmj*. 2003;327(7420):904-905.
62. Hediger ML, Overpeck MD, Kuczmarski RJ, Ruan WJ. Association between infant breastfeeding and overweight in young children. *Jama*. 2001;285(19):2453-2460.
63. Armstrong J, Reilly JJ. Breastfeeding and lowering the risk of childhood obesity. *Lancet*. 2002;359(9322):2003-2004.
64. Neyzi G, Binyildiz P, Gunoz H. Influence of feeding pattern in early infancy on ponderal index and relative weight. In: Borms K, ed. *Human Growth and Development*. 1984:603-611.

65. Horta BL, Bahl R, Martinés JC, Victoria CG. Evidence on the long-term effects of breastfeeding: systematic review and meta-analyses. *World Health Organization*. 2007:1-52.
66. Gillman MW, Rifas-Shiman SL, Berkey CS, et al. Breast-feeding and overweight in adolescence: within-family analysis [corrected]. *Epidemiology*. 2006;17(1):112-114.
67. Nelson MC, Gordon-Larsen P, Adair LS. Are adolescents who were breast-fed less likely to be overweight? Analyses of sibling pairs to reduce confounding. *Epidemiology*. 2005;16(2):247-253.
68. Whitehead RG. For how long is exclusive breast-feeding adequate to satisfy the dietary energy needs of the average young baby? *Pediatr Res*. 1995;37(2):239-243.
69. Chellakooty M, Juul A, Boisen KA, et al. A prospective study of serum insulin-like growth factor I (IGF-I) and IGF-binding protein-3 in 942 healthy infants: associations with birth weight, gender, growth velocity, and breastfeeding. *J Clin Endocrinol Metab*. 2006;91(3):820-826.
70. Savino F, Lupica MM, Liguori SA, Fissore MF, Silvestro L. Ghrelin and feeding behaviour in preterm infants. *Early Hum Dev*. 2012;88 Suppl 1:S51-55.
71. Protein and amino acid requirements in human nutrition. *World Health Organ Tech Rep Ser*. 2007(935):1-265, back cover.
72. Michaelsen KF, Larnkjaer A, Molgaard C. Amount and quality of dietary proteins during the first two years of life in relation to NCD risk in adulthood. *Nutr Metab Cardiovasc Dis*. 2012;22(10):781-786.
73. Yang Z, Huffman SL. Nutrition in pregnancy and early childhood and associations with obesity in developing countries. *Matern Child Nutr*. 2013;9 Suppl 1:105-119.
74. Axelsson I. Effects of high protein intakes. *Nestle Nutr Workshop Ser Pediatr Program*. 2006;58:121-129; discussion 129-131.
75. Socha P, Janas R, Dobrzanska A, et al. Insulin like growth factor regulation of body mass in breastfed and milk formula fed infants. Data from the E.U. Childhood Obesity Programme. *Adv Exp Med Biol*. 2005;569:159-163.

76. Schueler J, Alexander B, Hart AM, Austin K, Larson-Meyer DE. Presence and dynamics of leptin, GLP-1, and PYY in human breast milk at early postpartum. *Obesity (Silver Spring)*. 2013;21(7):1451-1458.
77. Fields DA, Demerath EW. Relationship of insulin, glucose, leptin, IL-6 and TNF-alpha in human breast milk with infant growth and body composition. *Pediatr Obes*. 2012;7(4):304-312.
78. Hawkins SS, Cole TJ, Law C. An ecological systems approach to examining risk factors for early childhood overweight: findings from the UK Millennium Cohort Study. *J Epidemiol Community Health*. 2009;63(2):147-155.
79. Morgan J, Lucas A, Fewtrell M. Does weaning influence growth and health up to 18 months? *Arch Dis Child*. 2004;89(8):728-733.
80. Mehta KC, Specker BL, Bartholmey S, Giddens J, Ho ML. Trial on timing of introduction to solids and food type on infant growth. *Pediatrics*. 1998;102(3 Pt 1):569-573.
81. Li RW, Fein SB, Grummer-Strawn LM. Do Infants Fed From Bottles Lack Self-regulation of Milk Intake Compared With Directly Breastfed Infants? *Pediatrics*. 2010;125(6):E1386-E1393.
82. Fein SB, Labiner-Wolfe J, Shealy KR, Li R, Chen J, Grummer-Strawn LM. Infant Feeding Practices Study II: study methods. *Pediatrics*. 2008;122 Suppl 2:S28-35.
83. Disantis KI, Collins BN, Fisher JO, Davey A. Do infants fed directly from the breast have improved appetite regulation and slower growth during early childhood compared with infants fed from a bottle? *Int J Behav Nutr Phys Act*. 2011;8:89.
84. WHO Child Growth Standards based on length/height, weight and age. *Acta Paediatr Suppl*. 2006;450:76-85.
85. de Onis M, Onyango AW, Van den Broeck J, Chumlea WC, Martorell R. Measurement and standardization protocols for anthropometry used in the construction of a new international growth reference. *Food Nutr Bull*. 2004;25(1 Suppl):S27-36.
86. WHO | WHO Child Growth Standards: Methods and development. *WHO*. 2014.

87. Ellis KJ, Yao M, Shypailo RJ, Urlando A, Wong WW, Heird WC. Body-composition assessment in infancy: air-displacement plethysmography compared with a reference 4-compartment model. *Am J Clin Nutr.* 2007;85(1):90-95.
88. Schmelzle HR, Fusch C. Body fat in neonates and young infants: validation of skinfold thickness versus dual-energy X-ray absorptiometry. *Am J Clin Nutr.* 2002;76(5):1096-1100.

## APPENDIX A

### FLYER

# HOW WILL YOUR BABY GROW IN THE FIRST SIX MONTHS?

Are you fascinated with how your baby will grow?

Are you looking for a way to track your baby's growth?

Are you interested in participating in a research study at the University of North Carolina at Greensboro?

**The purpose of the Feeding & Infant Growth (FIG) study is to learn more about infant feeding practices and their effect on growth during the first 6 months of life.**

#### WHO IS ELIGIBLE?

Women who are...

- **18 years or older**
- **Free of long term medical conditions**
- **English speaking**

AND have a child that is...

- **Less than 2 months of age**
- **A singleton (not a twin, triplet, etc.)**
- **Not premature**
- **More than 5.5 pounds at birth**
- **Free of any serious medical conditions**

#### WHAT IS REQUIRED?

If eligible, you will be asked to take part in 4 home visits over the first 6 months of your child's life. The visits will take approximately 1 hour. During each visit researchers will take measurements of your baby including weight, length, and skinfold thickness. In addition, you will be asked to complete 1 questionnaire each month on how you feed your baby. After each home visit you will receive a small gift for your family like a small toy, bib, or recipe book. After the last home visit you will receive a complete record of information about your child's growth for the first 6 months of his or her life.

#### FOR MORE INFORMATION, PLEASE CONTACT:

Dr. Cheryl Lovelady or Kelsey Wilson  
at 336-256-1090 or email: [klwilso5@uncg.edu](mailto:klwilso5@uncg.edu)  
University of North Carolina at Greensboro  
Human Nutrition Laboratory



APPENDIX B  
CONSENT FORM

UNIVERSITY OF NORTH CAROLINA AT GREENSBORO  
CONSENT TO ACT AS A HUMAN PARTICIPANT



Project Title: Feeding and Infant Growth (FIG)

Principal Investigator and Research Assistant: Cheryl Lovelady and Kelsey Wilson

Participant's Name: \_\_\_\_\_

**What is the study about?**

This is a research project studying the effects of infant feeding practices on the growth of infants during the first six months of life. Your participation in this study is voluntary.

**Why are you asking me?**

We are recruiting both women and their babies to be involved in this study. Women who are 18 years or older, up to 2 months postpartum, and free of any long-term medical conditions are eligible. Babies must be singletons (not a twin, triplet, etc.), born after 35 weeks gestation, weigh at least 5.5 lbs at birth, and free of any serious medical conditions.

**What will you ask me to do if I agree to be in the study?**

This study will begin in the first month after your baby is born and continue for the next 6 months.

If you consent to participate, you will be asked to:

1. Schedule 4 home visits; each will be approximately 1 hour in length. You will be asked to schedule these visits with the researcher via your preference of phone or email. Researchers will email or call to remind you within 1 week before your next visit.

During the first home visit when your baby is less than 2 months old you will be asked to complete the first questionnaire on infant feeding. No measurements will be taken during this visit.

The 3 remaining home visits will occur when your baby is approximately 2 months old, 4 months old, and 6 months old. Several measurements will be taken to include:

- **Baby's weight and length:** For accuracy purposes you will be asked to remove your infant's clothing and diaper before your baby is weighed. Babies will be weighed on a scale and measured on a length board. These measurements are taken similarly at your doctor's office.
- **Baby's skinfold thickness:** The skinfold thickness measurements are useful indicators of growth and body fat. A skinfold consists of a double fold of skin and the layer of fat that lies just beneath the skin, not including the muscle.

In this study we will measure your baby's skinfold thickness at 2 different sites, the mid

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point of your baby's upper arm and below the shoulder on your baby's back. The skinfold thickness measurements may cause minimal discomfort at the time of the measurement. However, researchers are trained to grasp the skinfold gently to avoid causing unnecessary discomfort. The measurement involves the researcher grasping a double fold of your baby's skin and placing caliper tips on either side of the fold. Researchers then release the caliper handles allowing the tips of the caliper to slowly close on the double fold of skin for 2 seconds before taking the measurement reading. To make sure the measurement is correct researchers will take at least 2 measurements at each of the 2 skinfold sites. Researchers will stop the measurement if at any time your baby becomes upset, appears to be in pain, or at your request.

- **Mother's weight and height:** You will be asked to wear light clothing for this measurement. You will be asked to remove shoes, any heavy clothing or jewelry before being weighed. A scale will measure weight and a portable stadiometer will be used to measure height.
- **Mother's waist circumference:** You will be asked to wear light clothing for this measurement. You may be asked to remove clothing or belts that may interfere with the measurement. A tape measure will be used to measure the smallest part of your waist.

2. Complete 1 questionnaire approximately every month on how you feed your baby. The first questionnaire will be completed during your first home visit. All other questionnaires will be mailed to you with a pre-paid return envelope enclosed. Each questionnaire will take approximately 20 minutes to complete. There will be a total of 6 questionnaires over the period of 6 months.

**What are the risks to me?**

The Institutional Review Board at the University of North Carolina at Greensboro has determined that participation in this study poses minimal risk to participants.

**Measurements:** Measurements taken may make you feel uncomfortable, but will be conducted in a private setting. In addition, your baby may experience temporary, minimal discomfort during skinfold thickness measurements. Researchers will stop the measurement if at any time your baby becomes upset, appears to be in pain, or at your request. Measurements taken may make you feel uncomfortable, but will be conducted in a private setting.

**Questionnaires:** If any questions on the questionnaires make you feel uncomfortable, you may choose to skip those questions.

If you have questions, want more information or have suggestions, please contact Dr. Cheryl Lovelady who may be reached at (336) 256-0310 or calovela@uncg.edu.

If you have any concerns about your rights, how you are being treated, concerns or complaints about this project or benefits or risks associated with being in this study please contact the Office of Research Integrity at UNCG toll-free at (855)-251-2351.

**Are there any benefits to society as a result of me taking part in this research?**

The results of this study may be used to improve infant feeding recommendations for the first six months of life and guide future research on infant feeding.

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**Are there any benefits to me for taking part in this research study?**

There are no direct benefits for participating in this study. However, at the end of the study you will receive a detailed record of your baby's growth over the first 6 months of his or her life at no cost.

**Will I get paid for being in the study? Will it cost me anything?**

There are no costs to you or payments made for participating in this study. However, you will receive 1 small family gift (recipe book, picture frame, small toy, bib, etc) for each home visit that is completed (totaling up to 4 small gifts).

**How will you keep my information confidential?**

All information obtained in this study is strictly confidential unless disclosure is required by law. Your name will be removed from documents and replaced with codes. All information will be stored in a locked file cabinet in the Human Nutrition Lab. The list connecting your name to the code will be stored separately from the other data. Only authorized researchers will have access to the records. Any report of this research that is made available to the public will not include your name or any other individual information by which you could be identified. Any identifiable information will be destroyed 3 years after completion of the study.

However, if researchers suspect neglect or abuse of your child they are legally obligated to report it to the appropriate authorities.

**What if I want to leave the study?**

You have the right to refuse to participate or to withdraw at any time, without penalty. If you do withdraw, it will not affect you in any way. If you choose to withdraw, you may request that any of your data which has been collected, be destroyed unless it is in a de-identifiable state.

**What about new information/changes in the study?**

If significant new information relating to the study becomes available which may relate to your willingness to continue to participate, this information will be provided to you.

**Voluntary Consent by Participant:**

By signing this consent form you are agreeing that you read, or it has been read to you, and you fully understand the contents of this document and are openly willing consent to take part in this study. All of your questions concerning this study have been answered. By signing this form, you are agreeing that you are 18 years of age or older and are agreeing to participate, or have the individual specified above as a participant participate, in this study described to you by \_\_\_\_\_.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

By signing this consent form, you are agreeing that you have read it or it has been read to you, you fully understand the contents of this document and consent to **your child** taking part in this study. All of your questions concerning this study have been answered. By signing this form, you are agreeing that you are the legal parent or guardian of the child who wishes to participate in this study described to you by \_\_\_\_\_.

\_\_\_\_\_  
Date: \_\_\_\_\_  
Participant's Parent/Legal Guardian's Signature

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9/16/13 to 9/15/14

APPENDIX C  
QUESTIONNAIRES

**Infant Feeding Questionnaire: Neonatal  
Feeding and Infant Growth (FIG) Study**



If you have older children, please only think about your youngest baby when you answer the questions.

**SECTION 1: YOUR NEW BABY'S BIRTH**

1. Is your baby a boy or a girl? Boy.....  Girl.....
2. What is your baby's date of birth? MONTH \_\_\_\_\_ DAY \_\_\_\_\_ YEAR \_\_\_\_\_
3. What was your baby's weight at birth? \_\_\_\_\_ POUNDS \_\_\_\_\_ OUNCES
4. What was your baby's length at birth? \_\_\_\_\_ INCHES
5. How much weight did you gain during this pregnancy? \_\_\_\_\_ POUNDS
6. What is your current weight? \_\_\_\_\_ POUNDS
7. What is your current height? \_\_\_\_\_ FEET \_\_\_\_\_ INCHES
8. What is the baby's father's current weight? \_\_\_\_\_ POUNDS
9. What is the baby's father's current height? \_\_\_\_\_ FEET \_\_\_\_\_ INCHES
10. In the past month, were you or your baby enrolled in the WIC program or did you get WIC food or vouchers for yourself or for your baby? (WIC is a program that gives food to pregnant and nursing women, babies, and young children.) **(PLEASE "X" ALL THAT APPLY)**  
Yes, I was enrolled or got WIC food for myself.....   
Yes, my baby was enrolled or got WIC formula or food .....   
No.....

**SECTION 2: YOU AND YOUR BABY IN THE FIRST FEW WEEKS**

11. As best you know, what is the recommended number of months to exclusively breastfeed a baby, meaning the baby is fed only breast milk?  
\_\_\_\_\_ MONTHS
12. Did you ever breastfeed or try to breastfeed your baby, either in the hospital or birth center, or after you went home?  
Yes.....  → (GO TO QUESTION 14) No.....

**Infant Feeding Questionnaire: Neonatal Feeding and Infant Growth (FIG) Study**



**IF YOU NEVER BREASTFED AT ALL, GO TO SECTION 3 ON PAGE 6. ALL OTHERS PLEASE CONTINUE.**

14. About how long after your delivery did you breastfeed or try to breastfeed your baby for the very first time?

- |                  |                          |                |                          |                  |                          |
|------------------|--------------------------|----------------|--------------------------|------------------|--------------------------|
| Less than 30 min | <input type="checkbox"/> | 3 to 6 hours   | <input type="checkbox"/> | 1 day            | <input type="checkbox"/> |
| 30 to 60 min     | <input type="checkbox"/> | 7 to 12 hours  | <input type="checkbox"/> | 2 days           | <input type="checkbox"/> |
| 1 to 2 hours     | <input type="checkbox"/> | 13 to 24 hours | <input type="checkbox"/> | More than 2 days | <input type="checkbox"/> |

15. While you were in the hospital for delivery of your baby, did anyone help you with breastfeeding by showing you how or talking to you about breastfeeding?

- Yes.....                       No.....

16. How many hours after the baby's birth did you first get help with breastfeeding?

- |                  |                          |                |                          |                  |                          |
|------------------|--------------------------|----------------|--------------------------|------------------|--------------------------|
| Less than 30 min | <input type="checkbox"/> | 3 to 6 hours   | <input type="checkbox"/> | 1 day            | <input type="checkbox"/> |
| 30 to 60 min     | <input type="checkbox"/> | 7 to 12 hours  | <input type="checkbox"/> | 2 days           | <input type="checkbox"/> |
| 1 to 2 hours     | <input type="checkbox"/> | 13 to 24 hours | <input type="checkbox"/> | More than 2 days | <input type="checkbox"/> |

17. Who helped you with breastfeeding? **(PLEASE "X" ALL THAT APPLY)**

- |         |                          |                      |                          |                                    |                          |
|---------|--------------------------|----------------------|--------------------------|------------------------------------|--------------------------|
| Doctor  | <input type="checkbox"/> | Lactation consultant | <input type="checkbox"/> | Friend(s)                          | <input type="checkbox"/> |
| Midwife | <input type="checkbox"/> | Peer counselor       | <input type="checkbox"/> | Breastfeeding support group member | <input type="checkbox"/> |
| Nurse   | <input type="checkbox"/> | Family member(s)     | <input type="checkbox"/> | Someone else                       | <input type="checkbox"/> |

18. Using 1 to mean "Not at all helpful" and 5 to mean "Very helpful," how helpful was the breastfeeding help you received from a doctor, midwife, nurse, or lactation consultant? If you did not receive help from one of these, go to **QUESTION 19**.

- |                           |                          |                          |                          |                          |  |
|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--|
| <b>NOT AT ALL HELPFUL</b> |                          |                          |                          | <b>VERY HELPFUL</b>      |  |
| (1)                       | (2)                      | (3)                      | (4)                      | (5)                      |  |
| <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |

19. While you were in the hospital or birth center, did your baby stay in your room day and night, except for doctor visits, bathing, or other treatments?

- Yes, all the time  → **GO TO QUESTION 21**      Yes, some nights but not all       No

20. Was your baby brought to you for feeding during the night?

- Yes.....                       No.....

21. When your baby was not in your room, how did the staff decide when to feed the baby or to bring him or her to you for feeding? **(PLEASE "X" ALL THAT APPLY)**

- Whenever he or she cried or seemed hungry
- On a schedule determined by the nurses or doctors
- Whenever you asked or went to get him or her
- Baby not out of room for significant amount of time
- Don't know

**Infant Feeding Questionnaire: Neonatal Feeding and Infant Growth (FIG) Study**



22. During the first few days after your baby was born, did you feed him or her...

- Whenever he or she cried or seemed hungry
- On a schedule or routine
- Sometimes on a schedule AND sometimes when he or she cried or seemed hungry

23. While you were in the hospital or birth center, was your baby fed water, formula, or sugar water at any time?

- |             | Yes                      | No                       | Don't Know               |
|-------------|--------------------------|--------------------------|--------------------------|
| Water       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Formula     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Sugar water | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

24. How long did it take for your milk to come in?

- 1 day or less       2 days       3 days       4 days       More than 4 days

25. Using 1 to mean "Disliked Very Much" and five to mean "Liked Very Much," how would you say you felt about breastfeeding during the first week you were breastfeeding?

- |                           |  |                          |                          |                          |                          |
|---------------------------|--|--------------------------|--------------------------|--------------------------|--------------------------|
| <b>DISLIKED VERY MUCH</b> |  |                          |                          |                          | <b>LIKED VERY MUCH</b>   |
| (1)                       |  | (2)                      | (3)                      | (4)                      | (5)                      |
| <input type="checkbox"/>  |  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

26. Were you given information about any breastfeeding support groups or services before you went home from the hospital or birth center?

- Yes.....       No.....

27. When you left the hospital or birth center, how were you feeding your baby?

- Breastfeeding only       Formula feeding only       Both breast and formula feeding

28. Did you have any pain while breastfeeding at any time in the first 2 weeks?

- Yes.....       No.....  → (GO TO QUESTION 30)

29. Using 0 to mean "No pain at all" and 10 to mean "The worst possible pain," how much pain, if any were you in when you were breastfeeding during the following time periods? (If you were not breastfeeding in some of the time periods, mark "NA" for Not Applicable).

- |                      | <b>NO PAIN</b>           |                          |                          |                          |                          |                          |                          |                          |                          | <b>WORST POSSIBLE PAIN</b> |                          |                          |
|----------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|----------------------------|--------------------------|--------------------------|
|                      | (0)                      | (1)                      | (2)                      | (3)                      | (4)                      | (5)                      | (6)                      | (7)                      | (8)                      | (9)                        | (10)                     | NA                       |
| 1 <sup>st</sup> day  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>   | <input type="checkbox"/> | <input type="checkbox"/> |
| 1 <sup>st</sup> week | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>   | <input type="checkbox"/> | <input type="checkbox"/> |
| 2 <sup>nd</sup> week | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>   | <input type="checkbox"/> | <input type="checkbox"/> |

**Infant Feeding Questionnaire: Neonatal Feeding and Infant Growth (FIG) Study**



30. Did you have any of the following problems breastfeeding your baby during your first 2 weeks of breastfeeding?  
(PLEASE "X" ALL THAT APPLY)

- |   |                          |  |                          |
|---|--------------------------|--|--------------------------|
| My baby had trouble sucking or latching on                | <input type="checkbox"/> | I didn't have enough milk                  | <input type="checkbox"/> |
| My baby choked  | <input type="checkbox"/> | My nipples were sore, cracked, or bleeding | <input type="checkbox"/> |
| My baby wouldn't wake up to nurse regularly enough        | <input type="checkbox"/> | My breasts were overfull (engorged)        | <input type="checkbox"/> |
| My baby was not interested in nursing                     | <input type="checkbox"/> | I had a yeast infection of the breast      | <input type="checkbox"/> |
| My baby got distracted                                    | <input type="checkbox"/> | I had a clogged milk duct                  | <input type="checkbox"/> |
| My baby nursed too often                                  | <input type="checkbox"/> | My breasts were infected or abscessed      | <input type="checkbox"/> |
| It took too long for my milk to come in                   | <input type="checkbox"/> | My breasts leaked too much                 | <input type="checkbox"/> |
| I had trouble getting the milk flow to start              | <input type="checkbox"/> | I had some other problem                   | <input type="checkbox"/> |
| My baby didn't gain enough weight or lost too much weight | <input type="checkbox"/> | I had no problems                          | <input type="checkbox"/> |

→ (GO TO SECTION 3 ON PAGE 6)

31. Did you ask for help with these problems from a health professional (a doctor, midwife, or nurse), a lactation consultant, or a breastfeeding support group?

Yes.....                       No.....

32. Did you get any help with these problems from a health professional, a lactation consultant, or a breastfeeding support group?

Yes.....                       No.....  → (GO TO SECTION 3 ON PAGE 6)

33. Did the help you received solve the problem(s) or make them better?

<b>NO, NOT AT ALL</b>					<b>YES, VERY MUCH</b>
(1)	(2)	(3)	(4)	(5)	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

CONTINUE TO THE NEXT PAGE →

**Infant Feeding Questionnaire: Neonatal Feeding and Infant Growth (FIG) Study**



**SECTION 3: FEEDING YOUR BABY**

34. In the past 7 days, how often was your baby fed each food listed below? Include feedings by everyone who feeds the baby and include snacks and night-time feedings.

If your baby was fed the food once a day or more, write the number of feedings per day in the first column. If your baby was fed the food less than once a day, write the number of feedings per week in the second column. **Fill in only one column for each item.** If your baby was not fed the food at all during the past seven days, write 0 in the second column.

	FEEDINGS PER DAY	FEEDINGS PER WEEK
Breast milk	_____	_____
Formula	_____	_____
Water	_____	_____
Sugar water	_____	_____
Cow's milk or any other milk (rice, soy, goat, or other)	_____	_____
100% fruit or 100% vegetable juice	_____	_____
Sweet drinks (juice drinks, soft drinks, soda, sweet tea, Kool-Aid, etc)	_____	_____
Baby cereal	_____	_____
Other (PLEASE SPECIFY) _____	_____	_____

35. How old was your baby when he or she was first fed formula?

- 1 day or less       7 to 13 days       More than 20 days   
 2 to 6 days       14 to 20 days       Never fed formula

36. What type of baby cereal was your baby fed in the past 7 days? (PLEASE "X" ALL THAT APPLY)

- Baby was not fed baby cereal       Dry cereal that you add liquid to       Cereal in a jar already mixed

**IF YOUR BABY WAS FED FORMULA IN THE PAST 7 DAYS, PLEASE CONTINUE. ALL OTHERS GO TO QUESTION 46 ON PAGE 8.**

37. In the past 7 days, about how many ounces of formula did your baby drink at each feeding?

- 1 to 2       3 to 4       5 to 6       7 to 8       More than 8

38. Which formula was fed to your baby in the past 7 days? Infant formulas are listed alphabetically on the Formula List insert along with a group number. Please "X" the group number for each infant formula your baby was fed.

(PLEASE "X" ALL THAT APPLY)

- Group 1     Group 2     Group 3     Group 4     Group 5     Group 6

**Infant Feeding Questionnaire: Neonatal Feeding and Infant Growth (FIG) Study**



39. What type of infant formula was your baby fed? (PLEASE "X" ALL THAT APPLY)

- |                    |                          |   |                          |
|--------------------|--------------------------|---|--------------------------|
| Ready to feed      | <input type="checkbox"/> | Powder from can that makes more than one bottle | <input type="checkbox"/> |
| Liquid concentrate | <input type="checkbox"/> | Powder from single serving packs                | <input type="checkbox"/> |

40. Which of the following describes the iron content of the formula you usually use?

- With iron       Low iron

41. How did you decide to use the formula you fed your baby in the past 7 days? (PLEASE "X" ALL THAT APPLY)

- |   |                          |   |                          |
|---|--------------------------|---|--------------------------|
| A doctor or other health professional recommended the formula | <input type="checkbox"/> | I chose a formula labeled as useful for a problem my baby had | <input type="checkbox"/> |
| I chose the same formula fed to my baby at the hospital       | <input type="checkbox"/> | I use the formula given by WIC                                | <input type="checkbox"/> |
| I heard that the formula is better for my baby in some way    | <input type="checkbox"/> | I chose the same formula I fed an older child                 | <input type="checkbox"/> |
| I chose the formula I received samples or coupons for         | <input type="checkbox"/> | Friends or relatives recommended the formula                  | <input type="checkbox"/> |
| I saw an advertisement for the formula and wanted to buy it   | <input type="checkbox"/> | I chose a formula based on low price                          | <input type="checkbox"/> |

42. Did you discuss your choice of formula with the baby's doctor?

- Yes.....       No.....

43. During the past 2 weeks, how many times have you switched the formula you feed your baby?

- None  → GO TO INSTRUCTION ABOVE QUESTION 46      1       2       3       4       5 or more

44. Did you switch formulas because your baby had a problem with the formula you were using?

- Yes.....       No.....  → (GO TO INSTRUCTION ABOVE QUESTION 46)

45. What type of problem did your baby have with the formula(s)? (PLEASE "X" ALL THAT APPLY)

- |                                     |                          |                                       |                          |
|-------------------------------------|--------------------------|---------------------------------------|--------------------------|
| An allergic reaction or intolerance | <input type="checkbox"/> | Too much gas                          | <input type="checkbox"/> |
| Constipation                        | <input type="checkbox"/> | Too much spit up                      | <input type="checkbox"/> |
| Diarrhea                            | <input type="checkbox"/> | Vomiting                              | <input type="checkbox"/> |
| Too much mucus                      | <input type="checkbox"/> | Other problems (Please specify _____) | <input type="checkbox"/> |

**CONTINUE TO THE NEXT PAGE →**

**Infant Feeding Questionnaire: Neonatal Feeding and Infant Growth (FIG) Study**



**IF YOUR BABY WAS BREASTFED AT ALL IN THE PAST 7 DAYS, PLEASE CONTINUE. ALL OTHERS GO TO SECTION 4 ON PAGE 10.**

46. Since your baby was born, have you attended a breastfeeding class or breastfeeding support group?

Yes.....  No.....

47. Does your baby usually feed from both breasts at each feeding?

Yes  No  Baby is fed only pumped milk  → (GO TO QUESTION 50)

48. Does your baby usually let go of the breast him or herself?

Yes, both breasts  Yes, first breast only  Yes, second breast only  No

49. About how long does an average breastfeeding last?

Less than 10 minutes  10 to 19 minutes  20 to 29 minutes  30 to 39 minutes  40 to 49 minutes  50 or more minutes

50. Using 1 to mean "Very Uncomfortable" and 5 to mean "Very Comfortable," how comfortable would you be in the following situations?

	VERY UNCOMFORTABLE				VERY COMFORTABLE
	(1)	(2)	(3)	(4)	(5)
Nursing your baby in the presence of close women friends	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nursing your baby in the presence of men and women who are close friends	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nursing your baby in the presence of men and women who are not close friends	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

51. In an average 24-hour period what is the **LONGEST** time for you, the mother, between breastfeeding or expressing? Please count the time from the start of one breastfeeding or expressing session to the start of the next. Please think of the time between feedings during both night and day to find the longest time. **(WRITE IN THE NUMBER OF HOURS AND MINUTES)**

\_\_\_\_\_ HOURS AND \_\_\_\_\_ MINUTES

52. How many times in the past 7 days was your baby fed pumped breast milk to drink? Include breast milk you expressed in any way as pumped milk. (Write in 0 if your baby was not fed expressed or pumped milk to drink and skip to 57)

\_\_\_\_\_ TIMES (IF 0, GO TO QUESTION 57)

53. On average in the past 7 days how many ounces of pumped breast milk was in the bottle or cup you fed to your baby (before beginning the feeding)?

1 ounce or less  2 ounces.....  3 to 4 ounces  5 to 6 ounces  7 to 8 ounces.....  More than 8 ounces



**Infant Feeding Questionnaire: Neonatal Feeding and Infant Growth (FIG) Study**



54. In the past 7 days, about how many ounces of pumped breast milk did your baby drink at each feeding?

1 to 2       3 to 4       5 to 6       7 to 8       More than 8

55. How often does your baby drink all of his or her cup or bottle of pumped milk?

Never       Rarely       Sometimes       Most of the time       Always

56. How often is your baby encouraged to finish a cup or bottle if he or she stops drinking before the pumped breast milk is gone?

Never       Rarely       Sometimes       Most of the time       Always

57. How old do you think your baby will be when you completely stop breastfeeding?

\_\_\_\_\_ MONTHS

58. Using 1 to mean "Not at all Confident" and 5 to mean "Very Confident," how confident are you that you will be able to breastfeed until the baby is the age you marked in Question 57?

NOT AT ALL CONFIDENT (1)       (2)       (3)       (4)       VERY CONFIDENT (5)

59. Using 1 to mean "Dislike Very Much" and 5 to mean "Like Very Much," how would you say you feel about breastfeeding now that your baby is several weeks old?

DISLIKE VERY MUCH (1)       (2)       (3)       (4)       LIKE VERY MUCH (5)

60. Using 1 to mean "Never" and 5 to mean "Always," please choose the answer for each of the following statements that best describe how you feel about breastfeeding your new baby.

	<u>Never</u>	(2)	(3)	(4)	<u>Always</u>
	(1)				(5)
I feel that I can find out what I need to know about breastfeeding my baby	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel that breastfeeding takes too much time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel that my baby gets enough breast milk at each feeding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel I can breastfeed my baby whether it hurts or not	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel that my family supports my decision to breastfeed my baby	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Infant Feeding Questionnaire: Neonatal Feeding and Infant Growth (FIG) Study**



**SECTION 4: OTHER INFORMATION**

61. Has your baby had jaundice at any time since he or she was born?

Yes.....

No.....  → (GO TO QUESTION 63)

62. How was the jaundice treated? (PLEASE "X" ALL THAT APPLY)

- I fed formula in addition to breastfeeding for a while
- I stopped breastfeeding for a while
- I stopped breastfeeding and did not begin breastfeeding again
- My baby was placed under a lamp (phototherapy)
- My baby received an exchange transfusion
- My baby received some other treatment
- No treatment was given

63. Since the time your baby was discharged from the hospital after birth, has he or she been hospitalized for any reason or has your baby been taken to the hospital for any outpatient procedure or surgery?

Yes.....

No.....  → (GO TO QUESTION 65)

64. How many nights was your baby in the hospital for the most recent problem since discharge after birth? (Write in 0 if your baby did not stay overnight.) \_\_\_\_\_ NIGHTS

65. Does your baby have any serious, long-term medical problems?

No.....

Yes.....  → (PLEASE EXPLAIN BRIEFLY) \_\_\_\_\_

66. What is your marital status?

- Single
- Married
- Separated or divorced
- Widowed
- Other

67. What is your ethnicity?

- Asian or Asian American, including Chinese, Japanese, and others
- Black or African American .....
- Hispanic or Latino, including Mexican American and Central American and others .....
- White, Caucasian, Anglo, European American, not Hispanic.....
- American Indian/Native American .....
- Other (Write in): \_\_\_\_\_
- Prefer not to answer.....

68. How many total children do you have? \_\_\_\_\_

69. What is **your** birthdate? MONTH \_\_\_\_\_ DAY \_\_\_\_\_ YEAR \_\_\_\_\_

**Infant Feeding Questionnaire: Neonatal Feeding and Infant Growth (FIG) Study**



70. What is the highest level of education you have completed?

- Graduate degree
- Some graduate school
- College degree
- Some college
- High school
- Some high school

71. What is the highest level of education your husband/partner has completed?

- Graduate degree
- Some graduate school
- College degree
- Some college
- High school
- Some high school
- Does not apply

72. Please "X" the box that best describes your total household income.

- Less than \$20,000
- \$20,000 to \$30,000
- \$30,000 to \$39,999
- \$40,000 to \$49,999
- \$50,000 to \$59,999
- More than \$60,000
- Prefer not to answer

73. Date you completed this form: MONTH \_\_\_\_\_ DAY \_\_\_\_\_ YEAR \_\_\_\_\_

**THANK YOU. PLEASE RETURN THIS QUESTIONNAIRE AS SOON AS POSSIBLE IN THE POSTAGE PAID ENVELOPE PROVIDED.**

**Infant Feeding Questionnaire: 2 Months  
Feeding and Infant Growth (FIG) Study**



**BABY'S FEEDING AND HEALTH**

If your baby is regularly cared for by someone else, it is very important that you ask your child care provider to give you information for the feeding questions.

If you have older children, please only think about your youngest baby when you answer the questions.

**SECTION 1: FEEDING**

1. In the past 7 days, how often was your baby fed each food listed below? Include feedings by everyone who feeds the baby and include snacks and night-time feedings.  
If your baby was fed the food once a day or more, write the number of feedings per day in the first column. If your baby was fed the food less than once a day, write the number of feedings per week in the second column. **Fill in only one column for each item.** If your baby was not fed the food at all during the past seven days, write 0 in the second column.

	FEEDINGS PER DAY	FEEDINGS PER WEEK
Breast milk	_____	_____
Formula	_____	_____
Cow's milk	_____	_____
Other milk: soy milk, rice milk, goat milk, etc	_____	_____
Other dairy foods: yogurt, cheese, ice cream, pudding, etc	_____	_____
Other soy foods: tofu, frozen soy desserts, etc	_____	_____
100% fruit or 100% vegetable juice	_____	_____
Sweet drinks: juice drinks, soft drinks, soda, sweet tea, Kool-Aid, etc	_____	_____
Baby cereal	_____	_____
Other cereals and starches: breakfast cereals, teething biscuits, crackers, breads, pasta, rice, etc	_____	_____
Fruit	_____	_____
Vegetables	_____	_____
French fries	_____	_____
Meat, chicken, combination dinners	_____	_____
Fish or shellfish	_____	_____
Peanut butter, other peanut foods, or nuts	_____	_____
Eggs	_____	_____
Sweet foods, candy, cookies, cake, etc	_____	_____
Other (PLEASE SPECIFY) _____	_____	_____

2. What type of baby cereal was your baby fed in the past 7 days? (PLEASE "X" ALL THAT APPLY)

Baby was not fed baby cereal       Dry cereal that you add liquid to       Cereal in a jar already mixed

3. Which of the following was your baby given in vitamin or mineral drops or pills at least 3 days a week during the past two weeks? If your baby was given drops or pills that contained more than one of the items listed, please mark each of the separate items. (PLEASE "X" ALL THAT APPLY)

Fluoride       Vitamin D       None of these   
Iron       Other Vitamins

**Infant Feeding Questionnaire: 2 Months Feeding and Infant Growth (FIG) Study**



4. During the past two weeks, how often was your baby put to bed with a bottle of formula, breast milk, juice, juice drink, or any other kind of milk?

- At most bedtimes, including naps.....
- At most night bedtimes, but not naps.....
- At most naps, but not night bedtimes.....
- Only occasionally at bedtimes, including naps
- Never .....

5. How often have you added each of the following items to your baby's bottle of formula or pumped (or expressed) breast milk in the past two weeks? If you have not given your baby a bottle in the past two weeks, "X" here  and go to the instruction above Question 6.

	NEVER	ONLY RARELY	EVERY FEW DAYS	ABOUT ONCE A DAY	AT MOST FEEDINGS	EVERY FEEDING
Vitamins or minerals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Baby cereal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sweetener	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Medicine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (Specify)_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**IF YOUR BABY WAS FED FORMULA IN THE PAST 7 DAYS, PLEASE CONTINUE. ALL OTHERS GO TO INSTRUCTION ABOVE QUESTION 12 ON PAGE 3.**

6. How often does your baby drink all of his or her bottle of formula?

- Never
- Rarely
- Sometimes
- Most of the time
- Always

7. In the past 7 days, about how many ounces of formula did your baby drink at each feeding?

- 1 to 2
- 3 to 4
- 5 to 6
- 7 to 8
- More than 8

8. How often is your baby encouraged to finish a bottle if he or she stops drinking before the formula is all gone?

- Never
- Rarely
- Sometimes
- Most of the time
- Always

9. Which formula was fed to your baby in the past 7 days? Infant formulas are listed alphabetically on the Formula List insert along with a group number. Please "X" the group number for each infant formula your baby was fed. (PLEASE "X" ALL THAT APPLY)

- Group 1
- Group 2
- Group 3
- Group 4
- Group 5
- Group 6

**Infant Feeding Questionnaire: 2 Months Feeding and Infant Growth (FIG) Study**



10. What type of infant formula was your baby fed? (PLEASE "X" ALL THAT APPLY)

- |                    |                          |   |                          |
|--------------------|--------------------------|---|--------------------------|
| Ready to feed      | <input type="checkbox"/> | Powder from can that makes more than one bottle | <input type="checkbox"/> |
| Liquid concentrate | <input type="checkbox"/> | Powder from single serving packs                | <input type="checkbox"/> |

11. Which of the following describes the iron content of the formula you usually use?

- With iron       Low iron

**IF YOUR BABY WAS BREASTFED OR FED BREAST MILK IN A BOTTLE IN THE PAST 7 DAYS, PLEASE CONTINUE. ALL OTHERS GO TO SECTION 2 ON THE NEXT PAGE.**

12. Does your baby usually feed from both breasts at each feeding?

- Yes       No       Baby is fed only pumped milk  → (GO TO QUESTION 15)

13. Does your baby usually let go of the breast him or herself?

- Yes, both breasts       Yes, first breast only       Yes, second breast only       No

14. About how long does an average breastfeeding last?

- |                      |                          |                  |                          |                    |                          |
|----------------------|--------------------------|------------------|--------------------------|--------------------|--------------------------|
| Less than 10 minutes | <input type="checkbox"/> | 20 to 29 minutes | <input type="checkbox"/> | 40 to 49 minutes   | <input type="checkbox"/> |
| 10 to 19 minutes     | <input type="checkbox"/> | 30 to 39 minutes | <input type="checkbox"/> | 50 or more minutes | <input type="checkbox"/> |

15. In an average 24-hour period what is the LONGEST time for you, the mother, between breastfeeding or pumping milk? Please count the time from the start of one breastfeeding or pumping session to the start of the next. Please think of the time between feedings during both night and day to find the longest time. (WRITE IN THE NUMBER OF HOURS AND MINUTES)

\_\_\_\_\_ HOURS      AND      \_\_\_\_\_ MINUTES

16. How many times in the past 7 days was your baby fed pumped breast milk to drink? Include breast milk you expressed in any way as pumped milk. (Write in 0 if your baby was not fed expressed or pumped milk to drink.) \_\_\_\_\_ TIMES (IF 0, GO TO SECTION 2 ON THE NEXT PAGE)

17. On average in the past 7 days how many ounces of pumped breast milk was in the bottle or cup you fed to your baby (before beginning the feeding)?

- |                 |                          |               |                          |                    |                          |
|-----------------|--------------------------|---------------|--------------------------|--------------------|--------------------------|
| 1 ounce or less | <input type="checkbox"/> | 3 to 4 ounces | <input type="checkbox"/> | 7 to 8 ounces..... | <input type="checkbox"/> |
| 2 ounces.....   | <input type="checkbox"/> | 5 to 6 ounces | <input type="checkbox"/> | More than 8 ounces | <input type="checkbox"/> |

18. In the past 7 days, about how many ounces of pumped breast milk did your baby drink at each feeding?

- 1 to 2       3 to 4       5 to 6       7 to 8       More than 8

**Infant Feeding Questionnaire: 2 Months  
Feeding and Infant Growth (FIG) Study**



19. How often does your baby drink all of his or her cup or bottle of pumped milk?

- Never                       Rarely                       Sometimes                       Most of the time                       Always

20. How often is your baby encouraged to finish a cup or bottle if he or she stops drinking before the pumped breast milk is gone?

- Never                       Rarely                       Sometimes                       Most of the time                       Always

**SECTION 2: HEALTH**

21. Which of the following problems did your baby have during the past 2 weeks? (**PLEASE "X" ALL THAT APPLY**)

- |                    |                          |                                   |                          |
|--------------------|--------------------------|-----------------------------------|--------------------------|
| Fever.....         | <input type="checkbox"/> | Runny nose or cold.....           | <input type="checkbox"/> |
| Diarrhea.....      | <input type="checkbox"/> | Respiratory Syncytial Virus (RSV) | <input type="checkbox"/> |
| Vomiting.....      | <input type="checkbox"/> | Cough or wheeze.....              | <input type="checkbox"/> |
| Ear Infection..... | <input type="checkbox"/> | Asthma.....                       | <input type="checkbox"/> |
| Colic.....         | <input type="checkbox"/> | Food Allergy.....                 | <input type="checkbox"/> |
| Fussy or irritable | <input type="checkbox"/> | Eczema (atopic dermatitis).....   | <input type="checkbox"/> |
| Reflux.....        | <input type="checkbox"/> | None of these.....                | <input type="checkbox"/> |

22. Did your baby receive any of the following medicines in the past 2 weeks? (Please do not include vitamins or minerals.)

- |                                 |                          |                          |
|---------------------------------|--------------------------|--------------------------|
|                                 | <b>YES</b>               | <b>NO</b>                |
| Antibiotics.....                | <input type="checkbox"/> | <input type="checkbox"/> |
| Other prescription medicines... | <input type="checkbox"/> | <input type="checkbox"/> |
| Non-prescription medicines....  | <input type="checkbox"/> | <input type="checkbox"/> |

23. How much did your baby weigh the last time he or she was weighed at a doctor's visit?

- \_\_\_\_\_ POUNDS                      \_\_\_\_\_ OUNCES                      Don't know.....

24. What was the date of that weight?

- \_\_\_\_\_ MONTH                      \_\_\_\_\_ DAY                      Don't know.....

25. How long was your baby the last time he or she was measured at the doctor's visit?

- \_\_\_\_\_ INCHES                      Don't know.....

26. What was the date of that measurement?

- \_\_\_\_\_ MONTH                      \_\_\_\_\_ DAY                      Don't know.....

27. Has your baby been hospitalized for any reason or has your baby been taken to a hospital for any outpatient procedure or surgery in the past 4 weeks?

- Yes.....                      No..... → (GO TO SECTION 3 ON THE NEXT PAGE)

**Infant Feeding Questionnaire: 2 Months  
Feeding and Infant Growth (FIG) Study**



28. How many nights was your baby in the hospital for the most recent problem? (Write 0 if your baby did not stay overnight.)

\_\_\_\_\_ NIGHTS

**SECTION 3: STOPPED BREASTFEEDING**

29. Did you ever breastfeed your baby (or feed your baby your pumped milk)?

Yes.....  → (CONTINUE) No.....  → (GO TO SECTION 8 ON PAGE 11)

30. Have you completely stopped breastfeeding and pumping milk for your baby?

Yes.....  → (CONTINUE) No.....  → (GO TO SECTION 4 ON PAGE 7)

31. Did you breastfeed as long as you wanted to?

Yes.....  No.....

32. How old was your baby when you completely stopped breastfeeding and pumping milk?

\_\_\_\_\_ DAYS (if younger than 2 weeks) OR \_\_\_\_\_ WEEKS

**CONTINUE TO THE NEXT PAGE →**



**Infant Feeding Questionnaire: 2 Months Feeding and Infant Growth (FIG) Study**



33. How important was each of the following reasons for your decision to stop breastfeeding your baby? (PLEASE ANSWER EACH ITEM)

	NOT AT ALL IMPORTANT	NOT VERY IMPORTANT	SOMEWHAT IMPORTANT	VERY IMPORTANT
My baby had trouble sucking or latching on	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My baby became sick and could not breastfeed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My baby began to bite	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My baby lost interest in nursing or began to wean him or herself	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My baby was old enough that the difference between breast milk and formula no longer mattered	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Breast milk alone did not satisfy my baby	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I thought that my baby was not gaining enough weight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A health professional said my baby was not gaining enough weight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I had trouble getting the milk flow to start	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I didn't have enough milk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My nipples were sore, cracked or bleeding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My breasts were overfull or engorged	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My breasts were infected or abscessed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My breasts leaked too much	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Breastfeeding was too painful	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Breastfeeding was too tiring	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I was sick or had to take medicine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Breastfeeding was too inconvenient	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I did not like breastfeeding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wanted to be able to leave my baby for several hours at a time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wanted to go on a weight loss diet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wanted to go back to my usual diet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wanted to smoke again or more than I did while breastfeeding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I had too many household duties	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I could not or did not want to pump or breastfeed at work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pumping milk no longer seemed worth the effort that it required	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I was not present to feed my baby for reasons other than work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wanted or needed someone else to feed the baby	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I did not want to breastfeed in public	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wanted my body back to myself	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I became pregnant or wanted to become pregnant again	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Infant Feeding Questionnaire: 2 Months Feeding and Infant Growth (FIG) Study**



34. Did any of the following people want you to stop breastfeeding? (Mark "does not apply" if you do not have the person listed, such as "employer" if you do not work for pay.)

	YES	NO	DOES NOT APPLY / DON'T KNOW
The baby's father .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your mother .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your mother-in-law.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your grandmother.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Another family member.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A doctor or other health professional	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your employer or supervisor.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

35. Using 1 to mean "Very favorable" and 5 to mean "Very unfavorable," how do you feel about the experience of having breastfed your baby?

VERY FAVORABLE					VERY UNFAVORABLE	
(1)	(2)	(3)	(4)	(5)		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

36. Using 1 to mean "Not at all likely" and 5 to mean "Very likely," how likely is it that you would breastfeed again if you had another child?

NOT AT ALL LIKELY					VERY LIKELY	
(1)	(2)	(3)	(4)	(5)		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

**SECTION 4: BREASTFEEDING**

37. Did you ever breastfeed your baby (or feed your baby your pumped milk)?

Yes.....  → (CONTINUE)      No.....  → (GO TO SECTION 8 ON PAGE 11)

CONTINUE TO THE NEXT PAGE →

**Infant Feeding Questionnaire: 2 Months  
Feeding and Infant Growth (FIG) Study**



38. Have you obtained information about breastfeeding, your diet while breastfeeding, or breast pumps from any of the following sources for this baby or the previous one?

	INFORMATION ABOUT BREASTFEEDING	INFORMATION ABOUT BREAST PUMPS	NO INFORMATION FROM THIS SOURCE
Doctor or physicians assistant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nurse, nurse midwife, or nurse practitioner	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nutritionist or dietitian	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
WIC food program	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lactation consultant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Relatives or friends	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Birthing or baby classes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Telephone support helpline or hotline	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Books or videos	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Newsletters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Newspapers or magazines	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Television or radio	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Website	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

39. Using 1 to mean "Very uncomfortable," and 5 to mean "Very comfortable," how comfortable would you be in the following situations?

	VERY UNCOMFORTABLE				VERY COMFORTABLE
	(1)	(2)	(3)	(4)	(5)
Nursing your baby in the presence of close women friends	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nursing your baby in the presence of men and women who are close friends	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nursing your baby in the presence of men and women who are not close friends	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

40. Have you breastfed your baby or pumped breast milk in the past 7 days?

Yes.....  → (CONTINUE)      No.....  → (GO TO SECTION 5 ON PAGE 10)

41. How old do you think your baby will be when you completely stop breastfeeding?

2 months	<input type="checkbox"/>	5 months	<input type="checkbox"/>	8 months	<input type="checkbox"/>	11 months	<input type="checkbox"/>
3 months	<input type="checkbox"/>	6 months	<input type="checkbox"/>	9 months	<input type="checkbox"/>	12 months	<input type="checkbox"/>
4 months	<input type="checkbox"/>	7 months	<input type="checkbox"/>	10 months	<input type="checkbox"/>	More than 12 months	<input type="checkbox"/>

42. Using 1 to mean "Not at all Confident" and 5 to mean "Very Confident," how confident are you that you will be able to breastfeed until the baby is the age you marked in Question 41?

NOT AT ALL CONFIDENT				VERY CONFIDENT
(1)	(2)	(3)	(4)	(5)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Infant Feeding Questionnaire: 2 Months Feeding and Infant Growth (FIG) Study**



43. Did you work for pay any time during the past 4 weeks?

Yes.....  No.....  → (GO TO SECTION INSTRUCTION ABOVE QUESTION 45 ON THIS PAGE)

44. Which of the following circumstances describe your situation during the past 4 weeks? (If you have stopped breastfeeding or stopped working for pay, please answer for the time you were breastfeeding and working. If you have worked for less than 4 weeks, please answer for the time you have been working.) (PLEASE "X" ALL THAT APPLY)

- I keep my baby with me while I work and breastfeed during my work day.....
- I go to my baby and breastfeed him or her during my work day.....
- My baby is brought to me to breastfeed during my work day.....
- I pump milk during my work day and save it for my baby to drink later.....
- I pump milk during my work day, but I do not save it for my baby to drink later.....
- I neither pump milk nor breastfeed during my work day.....

**IF YOU ANSWERED SECTION 3: STOPPED BREASTFEEDING ON THIS QUESTIONNAIRE, GO TO SECTION 5 ON THE NEXT PAGE.**

45. Was your baby fed formula to drink in the past 2 weeks, by you or anyone else?

Yes.....  No.....  → (GO TO SECTION 5 ON PAGE 10)

46. How important was each of the following reasons for feeding your baby formula? (PLEASE ANSWER EACH ITEM)

	NOT AT ALL IMPORTANT	NOT VERY IMPORTANT	SOMEWHAT IMPORTANT	VERY IMPORTANT
My baby had trouble sucking or latching on	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My baby became sick and could not breastfeed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My baby lost interest in nursing or began to wean him or herself	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My baby was old enough that the difference between breast milk and formula no longer mattered	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Breast milk alone did not satisfy my baby	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I thought that my baby was not gaining enough weight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A health professional said my baby was not gaining enough weight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I didn't have enough milk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My nipples were sore, cracked, or bleeding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My breasts were infected or abscessed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Breastfeeding was too painful	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Breastfeeding was too tiring	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I was sick or had to take medicine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Breastfeeding was too inconvenient	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wanted to be able to leave my baby for several hours at a time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I could not or did not want to pump or breastfeed at work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pumping milk no longer seemed worth the effort it required	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I was not present to feed my baby for reasons other than work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wanted or needed someone else to feed my baby	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Someone else wanted to feed the baby	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I did not want to breastfeed in public	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Infant Feeding Questionnaire: 2 Months Feeding and Infant Growth (FIG) Study**



**SECTION 5: BREAST PUMPS**

47. Since your baby was born, have you ever pumped or tried to pump milk? (Include expressing breast milk in any way as pumping milk.)  
 Yes, but I did not get any milk       Yes, and I got milk       No  → GO TO SECTION 8 ON PAGE 12
48. How old was your baby the first time you pumped or tried to pump milk?  
 \_\_\_\_\_ DAYS      OR      \_\_\_\_\_ WEEKS
49. How have you pumped or expressed milk since the baby was born? (PLEASE "X" ALL THAT APPLY)
- Electric breast pump.....
  - Combination electric and battery operated breast pump
  - Battery operated pump .....
  - Manual breast pump (no batteries, no cord to plug in)...
  - By hand (without using a pump).....

50. Have you had any of the following problems with a breast pump that you used to express milk since the baby was born? (PLEASE "X" ALL THAT APPLY)
- Pressure or suction from the pump was hard to release
  - Pump was uncomfortable or painful to use even though it did not cause injury
  - Pump had a bad seal or milk got into the motor or other place it should not be
  - Could not get pump to work or to express any milk
  - Pump worked, but did not get enough/much milk
  - Pump worked, but it took too long to get enough milk
  - Pump worked for a while but then quit working
  - Pump had another problem (SPECIFY) \_\_\_\_\_
  - No Problems

**SECTION 6: PUMPING OR EXPRESSING MILK**

51. During the past 2 weeks, how many times did you pump milk? (Include expressing breast milk in any way as pumping milk.)  
 \_\_\_\_\_ TIMES IN PAST TWO WEEKS → (IF 0, GO TO SECTION 8 ON PAGE 11)
52. Are you now pumping milk on a regular schedule?  
 Yes.....       No.....  → (GO TO QUESTION 54)
53. How old was your baby when you first began pumping milk on a regular schedule?  
 \_\_\_\_\_ DAYS      OR      \_\_\_\_\_ WEEKS
54. On average, in the past 2 weeks, how many ounces of milk did you pump each time?
- 1 ounce or less       3 to 4 ounces       7 to 8 ounces.....
  - 2 ounces.....       5 to 6 ounces       More than 8 ounces

**Infant Feeding Questionnaire: 2 Months  
Feeding and Infant Growth (FIG) Study**



55. For what reasons have you pumped milk in the past 2 weeks? (PLEASE "X" ALL THAT APPLY)

- To relieve engorgement .....
- Because my nipples were too sore to nurse.....
- To increase my milk supply .....
- To get milk for someone else to feed to my baby.....
- For me to feed my baby when I do not want to breastfeed or when my baby cannot breastfeed .....
- To keep my milk supply up when my baby could not nurse (such as while you were away from your baby or when your baby was too sick to nurse).....
- To mix with cereal or other food.....
- To have an emergency supply of milk .....
- To donate to a baby other than my own.....

56. In the past 2 weeks, has your baby been fed formula mixed with breast milk in the same bottle?

- Yes.....  No.....  → (GO TO SECTION 8 ON THIS PAGE)

57. How were the formula and breast milk usually mixed? (PLEASE "X" ALL THAT APPLY)

- Added formula powder to breast milk.....
- Added formula concentrate to breast milk.....
- Added prepared (mixed up) formula or ready-to-feed formula to breast milk.....

**SECTION 8: INFANT FORMULA**

58. Was your baby fed infant formula in the past 2 weeks, by you or anyone else?

- Yes.....  No.....  → (GO TO SECTION 9 ON PAGE 12)

59. Formula packages have several types of directions and statements. Which of these kinds of information have you read on the package of the formula you use most often? (PLEASE "X" ALL THAT APPLY)

- Written directions for preparing the formula.....
- How to store the package after opening it.....
- How to store the formula after it is prepared.....
- What to do with formula left over in the bottle after feeding the baby.....
- Have not read any of this information.....

60. How did you decide to use the formula you fed your baby in the past 7 days?

- |   |   |
|---|---|
| A doctor or other health professional recommended the formula..... <input type="checkbox"/> | I chose a formula labeled as useful for a problem my baby had..... <input type="checkbox"/> |
| I chose the same formula fed to my baby at the hospital..... <input type="checkbox"/>       | I use the formula given by WIC..... <input type="checkbox"/>                                |
| I heard that the formula is better for my baby in some way..... <input type="checkbox"/>    | I chose the same formula I fed an older child..... <input type="checkbox"/>                 |
| I chose the formula I received samples or coupons for..... <input type="checkbox"/>         | Friends or relatives recommended the formula..... <input type="checkbox"/>                  |
| I saw an advertisement for the formula and wanted to buy it..... <input type="checkbox"/>   | I chose a formula based on low price..... <input type="checkbox"/>                          |

**Infant Feeding Questionnaire: 2 Months Feeding and Infant Growth (FIG) Study**



61. Did you discuss your choice of formula with the baby's doctor?

Yes.....  No.....

62. During the past 2 weeks, how many times have you switched the formula you feed your baby?

None  → GO TO SECTION 9    1     2     3     4     5 or more

63. Which formulas did you stop using in the past 2 weeks? Infant formulas are listed alphabetically on the Formula List insert along with a group number. Please "X" the group number for each infant formula you stopped using. (PLEASE "X" ALL THAT APPLY)

Group 1     Group 2     Group 3     Group 4     Group 5     Group 6

64. Did you switch formulas because your baby had a problem with the formula you were using?

Yes.....  No.....  → (GO TO SECTION 9 ON THIS PAGE)

65. What type of problem did your baby have with the formula(s)? (PLEASE "X" ALL THAT APPLY)

An allergic reaction or intolerance	<input type="checkbox"/>	Too much gas .....	<input type="checkbox"/>
Constipation.....	<input type="checkbox"/>	Too much spit up.....	<input type="checkbox"/>
Diarrhea.....	<input type="checkbox"/>	Vomiting .....	<input type="checkbox"/>
Too much mucus.....	<input type="checkbox"/>	Other problems (Please specify _____)	<input type="checkbox"/>

**SECTION 9: OTHER INFORMATION**

66. In the past month, were you or your baby enrolled in the WIC program or did you get WIC food or vouchers for yourself or for your baby? (WIC is a program that gives food to pregnant and nursing women, babies, and young children.) (PLEASE "X" ALL THAT APPLY)

Yes, I was enrolled or got WIC food for myself.....   
 Yes, my baby was enrolled or got WIC formula or food .....   
 No.....

67. Does your baby have any serious, long-term medical problems?

No.....  Yes.....  → (PLEASE EXPLAIN BRIEFLY) \_\_\_\_\_

68. Date you completed this form: MONTH \_\_\_\_\_ DAY \_\_\_\_\_ YEAR \_\_\_\_\_

**THANK YOU. PLEASE RETURN THIS QUESTIONNAIRE AS SOON AS POSSIBLE IN THE POSTAGE PAID ENVELOPE PROVIDED.**

**Infant Feeding Questionnaire: 3 Months Feeding and Infant Growth (FIG) Study**



**BABY'S FEEDING AND HEALTH**

If your baby is regularly cared for by someone else, it is very important that you ask your child care provider to give you information for the feeding questions.

If you have older children, please only think about your youngest baby when you answer the questions.

**SECTION 1: FEEDING**

1. In the past 7 days, how often was your baby fed each food listed below? Include feedings by everyone who feeds the baby and include snacks and night-time feedings.  
 If your baby was fed the food once a day or more, write the number of feedings per day in the first column. If your baby was fed the food less than once a day, write the number of feedings per week in the second column. **Fill in only one column for each item.** *If your baby was not fed the food at all during the past seven days, write 0 in the second column.*

	FEEDINGS PER DAY	FEEDINGS PER WEEK
Breast milk	_____	_____
Formula	_____	_____
Cow's milk	_____	_____
Other milk: soy milk, rice milk, goat milk, etc	_____	_____
Other dairy foods: yogurt, cheese, ice cream, pudding, etc	_____	_____
Other soy foods: tofu, frozen soy desserts, etc	_____	_____
100% fruit or 100% vegetable juice	_____	_____
Sweet drinks: juice drinks, soft drinks, soda, sweet tea, Kool-Aid, etc	_____	_____
Baby cereal	_____	_____
Other cereals and starches: breakfast cereals, teething biscuits, crackers, breads, pasta, rice, etc	_____	_____
Fruit	_____	_____
Vegetables	_____	_____
French fries	_____	_____
Meat, chicken, combination dinners	_____	_____
Fish or shellfish	_____	_____
Peanut butter, other peanut foods, or nuts	_____	_____
Eggs	_____	_____
Sweet foods, candy, cookies, cake, etc	_____	_____
Other (PLEASE SPECIFY) _____	_____	_____

2. What type of baby cereal was your baby fed in the past 7 days? (PLEASE "X" ALL THAT APPLY)

Baby was not fed baby cereal       Dry cereal that you add liquid to       Cereal in a jar already mixed



**Infant Feeding Questionnaire: 3 Months Feeding and Infant Growth (FIG) Study**



3. Which of the following was your baby given in vitamin or mineral drops or pills at least 3 days a week during the past two weeks? If your baby was given drops or pills that contained more than one of the items listed, please mark each of the separate items. **(PLEASE "X" ALL THAT APPLY)**

Fluoride  Iron  Vitamin D  Other Vitamins  None of these

4. During the past two weeks, how often was your baby put to bed with a bottle of formula, breast milk, juice, juice drink, or any other kind of milk?

At most bedtimes, including naps.....   
 At most night bedtimes, but not naps.....   
 At most naps, but not night bedtimes.....   
 Only occasionally at bedtimes, including naps   
 Never .....

5. How often have you added each of the following items to your baby's bottle of formula or pumped (or expressed) breast milk in the past two weeks? If you have not given your baby a bottle in the past two weeks, "X" here  and go to the instruction above Question 6.

	NEVER	ONLY RARELY	EVERY FEW DAYS	ABOUT ONCE A DAY	AT MOST FEEDINGS	EVERY FEEDING
Vitamins or minerals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Baby cereal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sweetener	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Medicine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (Specify) _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**IF YOUR BABY WAS FED FORMULA IN THE PAST 7 DAYS, PLEASE CONTINUE. ALL OTHERS GO TO INSTRUCTION ABOVE QUESTION 12 ON PAGE 3.**

6. How often does your baby drink all of his or her bottle of formula?

Never  Rarely  Sometimes  Most of the time  Always

7. In the past 7 days, about how many ounces of formula did your baby drink at each feeding?

1 to 2  3 to 4  5 to 6  7 to 8  More than 8

8. How often is your baby encouraged to finish a bottle if he or she stops drinking before the formula is all gone?

Never  Rarely  Sometimes  Most of the time  Always

**Infant Feeding Questionnaire: 3 Months  
Feeding and Infant Growth (FIG) Study**



9. Which formula was fed to your baby in the past 7 days? Infant formulas are listed alphabetically on the Formula List insert along with a group number. Please "X" the group number for each infant formula your baby was fed. **(PLEASE "X" ALL THAT APPLY)**

Group 1   
  Group 2   
  Group 3   
  Group 4   
  Group 5   
  Group 6

10. What type of infant formula was your baby fed? **(PLEASE "X" ALL THAT APPLY)**

Ready to feed                          Powder from can that makes more than one bottle      
 Liquid concentrate                          Powder from single serving packs   

11. Which of the following describes the iron content of the formula you usually use?

With iron                          Low iron   

**IF YOUR BABY WAS BREASTFED OR FED BREAST MILK IN A BOTTLE IN THE PAST 7 DAYS, PLEASE CONTINUE. ALL OTHERS GO TO SECTION 2 ON THE NEXT PAGE.**

12. Does your baby usually feed from both breasts at each feeding?

Yes                          No                          Baby is fed only pumped milk     → (GO TO QUESTION 15)

13. Does your baby usually let go of the breast him or herself?

Yes, both breasts                          Yes, first breast only                          Yes, second breast only                          No   

14. About how long does an average breastfeeding last?

Less than 10 minutes                          20 to 29 minutes                          40 to 49 minutes      
 10 to 19 minutes                          30 to 39 minutes                          50 or more minutes   

15. In an average 24-hour period, what is the **LONGEST** time for you, the mother, between breastfeeding or pumping milk? Please count the time from the start of one breastfeeding or pumping session to the start of the next. Please think of the time between feedings during both night and day to find the longest time. **(WRITE IN THE NUMBER OF HOURS AND MINUTES)**

\_\_\_\_\_ HOURS                      **AND**                      \_\_\_\_\_ MINUTES

16. How many times in the past 7 days was your baby fed pumped breast milk to drink? Include breast milk you expressed in any way as pumped milk. (Write in 0 if your baby was not fed expressed or pumped milk to drink.)

\_\_\_\_\_ TIMES → (IF 0, GO TO SECTION 2 ON THE NEXT PAGE)

**Infant Feeding Questionnaire: 3 Months  
Feeding and Infant Growth (FIG) Study**



17. On average in the past 7 days how many ounces of pumped breast milk was in the bottle or cup you fed to your baby (before beginning the feeding)?

- 1 ounce or less       3 to 4 ounces       7 to 8 ounces.....   
 2 ounces.....       5 to 6 ounces       More than 8 ounces

18. In the past 7 days, about how many ounces of pumped breast milk did your baby drink at each feeding?

- 1 to 2       3 to 4       5 to 6       7 to 8       More than 8

19. How often does your baby drink all of his or her cup or bottle of pumped milk?

- Never**       **Rarely**       **Sometimes**       **Most of the time**       **Always**

20. How often is your baby encouraged to finish a cup or bottle if he or she stops drinking before the pumped breast milk is gone?

- Never**       **Rarely**       **Sometimes**       **Most of the time**       **Always**

**SECTION 2: HEALTH**

21. Which of the following problems did your baby have during the past 2 weeks? (PLEASE "X" ALL THAT APPLY)

- |   |  |
|---|--|
| Fever..... <input type="checkbox"/>         | Runny nose or cold..... <input type="checkbox"/>           |
| Diarrhea..... <input type="checkbox"/>      | Respiratory Syncytial Virus (RSV) <input type="checkbox"/> |
| Vomiting..... <input type="checkbox"/>      | Cough or wheeze..... <input type="checkbox"/>              |
| Ear Infection..... <input type="checkbox"/> | Asthma..... <input type="checkbox"/>                       |
| Colic..... <input type="checkbox"/>         | Food Allergy..... <input type="checkbox"/>                 |
| Fussy or irritable <input type="checkbox"/> | Eczema (atopic dermatitis)..... <input type="checkbox"/>   |
| Reflux..... <input type="checkbox"/>        | None of these..... <input type="checkbox"/>                |

22. Did your baby receive any of the following medicines in the past 2 weeks? (Please do not include vitamins or minerals.)

	YES	NO
Antibiotics.....	<input type="checkbox"/>	<input type="checkbox"/>
Other prescription medicines	<input type="checkbox"/>	<input type="checkbox"/>
Non-prescription medicines....	<input type="checkbox"/>	<input type="checkbox"/>

23. How much did your baby weigh the last time he or she was weighed at a doctor's visit?

- \_\_\_\_\_ POUNDS      \_\_\_\_\_ OUNCES      Don't know.....

24. What was the date of that weight?

- \_\_\_\_\_ MONTH      \_\_\_\_\_ DAY      Don't know.....

**Infant Feeding Questionnaire: 3 Months  
Feeding and Infant Growth (FIG) Study**



25. How long was your baby the last time he or she was measured at the doctor's visit?  
\_\_\_\_\_ INCHES      Don't know.....
26. What was the date of that measurement?  
\_\_\_\_\_ MONTH      \_\_\_\_\_ DAY      Don't know.....
27. Has your baby been hospitalized for any reason or has your baby been taken to a hospital for any outpatient procedure or surgery in the past 4 weeks?  
Yes.....      No..... → (GO TO SECTION 3 ON THIS PAGE)
28. How many nights was your baby in the hospital for the most recent problem? (Write 0 if your baby did not stay overnight.)  
\_\_\_\_\_ NIGHTS

**SECTION 3: STOPPED BREASTFEEDING**

29. Did you ever breastfeed your baby (or feed your baby your pumped milk)?  
Yes..... → (CONTINUE)      No..... → (GO TO SECTION 4 ON PAGE 7)
30. Have you completely stopped breastfeeding and pumping milk for your baby?  
Yes..... → (CONTINUE)      No..... → (GO TO SECTION 4 ON PAGE 7)
31. Have you filled out **SECTION 3: Stopped Breastfeeding** on a previous questionnaire since you stopped breastfeeding?  
Yes..... → (GO TO SECTION 4 ON PAGE 7)      No..... → (CONTINUE)
32. Did you breastfeed as long as you wanted to?  
Yes.....      No.....
33. How old was your baby when you completely stopped breastfeeding and pumping milk?  
\_\_\_\_\_ DAYS (if younger than 2 weeks)      OR      \_\_\_\_\_ WEEKS

**Infant Feeding Questionnaire: 3 Months  
Feeding and Infant Growth (FIG) Study**



34. How important was each of the following reasons for your decision to stop breastfeeding your baby?  
(PLEASE ANSWER EACH ITEM)

	NOT AT ALL IMPORTANT	NOT VERY IMPORTANT	SOMEWHAT IMPORTANT	VERY IMPORTANT
My baby had trouble sucking or latching on	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My baby became sick and could not breastfeed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My baby began to bite	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My baby lost interest in nursing or began to wean him or herself	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My baby was old enough that the difference between breast milk and formula no longer mattered	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Breast milk alone did not satisfy my baby	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I thought that my baby was not gaining enough weight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A health professional said my baby was not gaining enough weight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I had trouble getting the milk flow to start	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I didn't have enough milk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My nipples were sore, cracked or bleeding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My breasts were overfull or engorged	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My breasts were infected or abscessed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My breasts leaked too much	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Breastfeeding was too painful	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Breastfeeding was too tiring	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I was sick or had to take medicine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Breastfeeding was too inconvenient	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I did not like breastfeeding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wanted to be able to leave my baby for several hours at a time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wanted to go on a weight loss diet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wanted to go back to my usual diet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wanted to smoke again or more than I did while breastfeeding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I had too many household duties	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I could not or did not want to pump or breastfeed at work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pumping milk no longer seemed worth the effort that it required	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I was not present to feed my baby for reasons other than work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wanted or needed someone else to feed the baby	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I did not want to breastfeed in public	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wanted my body back to myself	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I became pregnant or wanted to become pregnant again	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Infant Feeding Questionnaire: 3 Months  
Feeding and Infant Growth (FIG) Study**



35. Did any of the following people want you to stop breastfeeding? (Mark "does not apply" if you do not have the person listed, such as "employer" if you do not work for pay.)

	YES	NO	DOES NOT APPLY / DON'T KNOW
The baby's father .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your mother .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your mother-in-law .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your grandmother .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Another family member .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A doctor or other health professional .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your employer or supervisor .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

36. Using 1 to mean "Very favorable" and 5 to mean "Very unfavorable," how do you feel about the experience of having breastfed your baby?

<b>VERY FAVORABLE</b>					<b>VERY UNFAVORABLE</b>
(1)	(2)	(3)	(4)		(5)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>

37. Using 1 to mean "Not at all likely" and 5 to mean "Very likely," how likely is it that you would breastfeed again if you had another child?

<b>NOT AT ALL LIKELY</b>					<b>VERY LIKELY</b>
(1)	(2)	(3)	(4)		(5)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>

38. What was the longest time your baby usually slept at night without waking?

	<b>2 Weeks</b>	<b>1 Month</b>	<b>2 Months</b>	<b>Now</b>
2 hours or less	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3 to 4 hours	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5 to 6 hours	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7 to 8 hours	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8 or more hours	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**SECTION 4: EMPLOYMENT**

39. Did you work for pay any time during the past 4 weeks?

Yes.....                       No.....  → (GO TO SECTION 5 ON PAGE 9)

40. How old was your baby when you began working after your delivery? (If you are not sure, give your best estimate).

\_\_\_\_\_ MONTHS                      AND                      \_\_\_\_\_ WEEKS

**Infant Feeding Questionnaire: 3 Months  
Feeding and Infant Growth (FIG) Study**



41. How many hours per week did you usually work at your job during the past 4 weeks? (Answer for whatever time you have been working if less than 4 weeks) (If you work at two or more jobs, answer for the total number of hours you work)

- |                         |                          |                             |                          |
|-------------------------|--------------------------|-----------------------------|--------------------------|
| 1 to 9 hours per week   | <input type="checkbox"/> | 30 to 34 hours per week     | <input type="checkbox"/> |
| 10 to 19 hours per week | <input type="checkbox"/> | 35 to 40 hours per week     | <input type="checkbox"/> |
| 20 to 29 hours per week | <input type="checkbox"/> | More than 40 hours per week | <input type="checkbox"/> |

42. What type of setting do you work in? .....

- A building (for example, office building, store or other retail building, restaurant, hospital, school).....
- A private residence (for example your home or someone else's home).....
- A vehicle (for example, transportation, delivery, flight attendant, pilot)....
- Outdoors (for example farmer, outdoor repair, gardener).....
- Other.....

43. Using 1 to mean "None" and 5 to mean "Very much," how much satisfaction do you get from your paid work?

- |                          |                          |                          |                          |                          |                          |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <b>NONE</b>              |                          |                          |                          |                          | <b>VERY MUCH</b>         |
| <b>1</b>                 | <b>2</b>                 | <b>3</b>                 | <b>4</b>                 | <b>5</b>                 |                          |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

44. What do you do with your baby while you are working? (PLEASE "X" ALL THAT APPLY)

- My baby is cared for by a family member.....
- My baby is cared for by someone not in my family.....
- I keep my baby with me while I work at home.....
- I keep my baby with me while I work outside my home.....

45. In your opinion, how supportive of breastfeeding is your place of employment?

- |                       |                          |                     |                          |
|-----------------------|--------------------------|---------------------|--------------------------|
| Not at all supportive | <input type="checkbox"/> | Somewhat supportive | <input type="checkbox"/> |
| Not too supportive    | <input type="checkbox"/> | Very supportive     | <input type="checkbox"/> |

46. Did you breastfeed for any time during the past four weeks?

- Yes.....  No.....  → (GO TO SECTION 5 ON PAGE 9)

47. Which of the following circumstances describe your situation during the past 4 weeks? (If you have stopped breastfeeding, please answer for the time you were breastfeeding) (PLEASE "X" ALL THAT APPLY)

- I keep my baby with me while I work and breastfeed during my work day.....
- I go to my baby and breastfeed him or her during my work day.....
- My baby is brought to me to breastfeed during my work day.....
- I pump milk during my work day and save it for my baby to drink later.....
- I pump milk during my work day, but I do not save it for my baby to drink later.....
- I neither pump milk nor breastfeed during my work day.....

**Infant Feeding Questionnaire: 3 Months  
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48. Have you had any of the following experiences during the past 4 weeks? Mark "No" if the item does not describe your circumstances, such as if you have no coworkers for the first item. (If you have stopped breastfeeding, please answer for the time you were breastfeeding.)

	YES	NO
A coworker made negative comments or complained about me breastfeeding	<input type="checkbox"/>	<input type="checkbox"/>
My employer or my supervisor made negative comments or complained to me about breastfeeding	<input type="checkbox"/>	<input type="checkbox"/>
It was hard for me to arrange break time for breastfeeding or pumping milk	<input type="checkbox"/>	<input type="checkbox"/>
It was hard for me to find a place to breastfeed or pump milk	<input type="checkbox"/>	<input type="checkbox"/>
It was hard for me to arrange a place to store pumped breast milk	<input type="checkbox"/>	<input type="checkbox"/>
It was hard for me to carry the equipment I needed to pump milk at work	<input type="checkbox"/>	<input type="checkbox"/>
I felt worried about keeping my job because of breastfeeding	<input type="checkbox"/>	<input type="checkbox"/>
I felt worried about continuing to breastfeed because of my job	<input type="checkbox"/>	<input type="checkbox"/>
I felt embarrassed among coworkers, my supervisor, or my employer because of breastfeeding	<input type="checkbox"/>	<input type="checkbox"/>

**SECTION 5: CHILDCARE**

49. Was your baby cared for by someone other than you on a regular schedule during the past 4 weeks? That is, did someone else usually keep your baby at least once a week for 3 or more hours at a time? (include arrangements in which the exact day or time may change if the child care usually occurred at least once a week).

**Please mark "yes" if your baby is regularly cared for by anyone other than you, including the baby's father or other close relative.**

Yes.....

No.....  → (GO TO SECTION 6 ON PAGE 11)

50. Who usually kept your baby during the past 4 weeks? (PLEASE "X" ALL THAT APPLY)

Baby's father   
Baby's grandparent(s)

Other family member(s)   
Someone not in your family

51. Where did the childcare usually occur? (PLEASE "X" ALL THAT APPLY)

Baby's home with no other children.....   
Baby's home with other children or baby's  
brothers or sisters.....   
Day care or child care center.....

Other private home with no other children.....   
Other private home with older children or baby's  
brothers or sisters.....   
Other.....

52. How many days in an average week was your baby cared for by your regularly scheduled child care provider(s)? (Include days your baby was cared for by family members if they regularly provide child care while you are away from the baby)

\_\_\_\_\_ DAYS PER WEEK

53. On an average day when your baby was with your regular child care provider(s), how many hours was he or she with the child care provider(s)?

\_\_\_\_\_ HOURS



**Infant Feeding Questionnaire: 3 Months  
Feeding and Infant Growth (FIG) Study**



**FOR QUESTIONS 54-56, IF YOUR ANSWER IS DIFFERENT FOR DIFFERENT CHILD CARE PROVIDERS, ANSWER FOR THE ONE WHO FED YOUR BABY THE MOST TIMES PER WEEK.**

54. In your opinion, how supportive of breastfeeding is your child care provider?

Not at all supportive       Somewhat supportive       Don't know   
 Not too supportive       Very supportive

55. On an average day when your baby was with your child care provider, how many times did the child care provider feed him or her? Please include feedings of breast milk, formula, and all other foods, and include meals and snacks.

\_\_\_\_\_ TIMES PER DAY FED BABY    None  → (GO TO INSTRUCTIONS ABOVE QUESTION 57)

56. How often did you find out what your regularly scheduled child care provider fed your baby?

Seldom or never       Sometimes       Always or most of the time

**IF YOUR BABY IS ONLY CARED FOR IN YOUR HOME, GO TO SECTION 6 ON THE NEXT PAGE.**

**ANSWER QUESTIONS 57-58 FOR YOUR CHILD CARE THAT IS OUTSIDE OF YOUR HOME. IF YOU HAVE MORE THAN ONE CHILD CARE PROVIDER OUTSIDE OF YOUR HOME, ANSWER FOR THE ONE WHO FEEDS YOUR BABY THE MOST TIMES PER WEEK.**

57. Under your regular child care arrangements in the past 4 weeks, who usually provided the formula, if any, and food that your baby drank and ate? Include meals and snacks. (PLEASE "X" ALL THAT APPLY)

	THE CHILD CARE PROVIDER	YOU, THE MOTHER	SOMEONE ELSE	BABY WAS NOT FED THIS ITEM
Who provided the baby's formula?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Who provided the baby's food for meals?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Who provided the baby's snacks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

58. Does your child care provider:

	YES	NO	DON'T KNOW
Feed a mother's pumped breast milk to her baby?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Allow mothers to breastfeed at the child care place before or after work?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Allow mothers to come in and breastfeed during their lunch or other breaks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Thaw and prepare bottles of pumped milk if needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Keep extra breast milk in a freezer for use if they run out during the day?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Infant Feeding Questionnaire: 3 Months  
Feeding and Infant Growth (FIG) Study**



**SECTION 6: OTHER INFORMATION**

59. During the past 2 weeks, have you had any health conditions which made it hard or impossible for you to take care of your baby?

Yes.....  No.....

60. On the average, how many cigarettes do you smoke a day now? (Write in 0 if you do not smoke).

\_\_\_\_\_ CIGARETTES PER DAY

61. How many people including yourself smoke inside your home most days? (*Include yourself, family members, friends, and anyone else*)

0  1  2  3  4 or more

62. In the past month, were you or your baby enrolled in the WIC program or did you get WIC food or vouchers for yourself or for your baby? (WIC is a program that gives food to pregnant and nursing women, babies, and young children.) **(PLEASE "X" ALL THAT APPLY)**

Yes, I was enrolled or got WIC food for myself.....   
Yes, my baby was enrolled or got WIC formula or food .....   
No.....

63. Does your baby have any serious, long-term medical problems?

No.....  Yes.....  → **(PLEASE EXPLAIN BRIEFLY)** \_\_\_\_\_

64. Date you completed this form: MONTH \_\_\_\_\_ DAY \_\_\_\_\_ YEAR \_\_\_\_\_

**THANK YOU. PLEASE RETURN THIS QUESTIONNAIRE AS SOON AS POSSIBLE IN THE POSTAGE PAID ENVELOPE PROVIDED.**

**Infant Feeding Questionnaire: 4 Months Feeding and Infant Growth (FIG) Study**



**BABY'S FEEDING AND HEALTH**

If your baby is regularly cared for by someone else, it is very important that you ask your child care provider to give you information for the feeding questions.

If you have older children, please only think about your youngest baby when you answer the questions.

**SECTION 1: FEEDING**

1. In the past 7 days, how often was your baby fed each food listed below? Include feedings by everyone who feeds the baby and include snacks and night-time feedings.  
 If your baby was fed the food once a day or more, write the number of feedings per day in the first column. If your baby was fed the food less than once a day, write the number of feedings per week in the second column. **Fill in only one column for each item.** If your baby was not fed the food at all during the past seven days, write 0 in the second column.

	FEEDINGS PER DAY	FEEDINGS PER WEEK
Breast milk	_____	_____
Formula	_____	_____
Cow's milk	_____	_____
Other milk: soy milk, rice milk, goat milk, etc	_____	_____
Other dairy foods: yogurt, cheese, ice cream, pudding, etc	_____	_____
Other soy foods: tofu, frozen soy desserts, etc	_____	_____
100% fruit or 100% vegetable juice	_____	_____
Sweet drinks: juice drinks, soft drinks, soda, sweet tea, Kool-Aid, etc	_____	_____
Baby cereal	_____	_____
Other cereals and starches: breakfast cereals, teething biscuits, crackers, breads, pasta, rice, etc	_____	_____
Fruit	_____	_____
Vegetables	_____	_____
French fries	_____	_____
Meat, chicken, combination dinners	_____	_____
Fish or shellfish	_____	_____
Peanut butter, other peanut foods, or nuts	_____	_____
Eggs	_____	_____
Sweet foods, candy, cookies, cake, etc	_____	_____
Other (PLEASE SPECIFY) _____	_____	_____

2. What type of baby cereal was your baby fed in the past 7 days? **(PLEASE "X" ALL THAT APPLY)**
- Baby was not fed baby cereal       Dry cereal that you add liquid to       Cereal in a jar already mixed
3. Which of the following was your baby given in vitamin or mineral drops or pills at least 3 days a week during the past two weeks? If your baby was given drops or pills that contained more than one of the items listed, please mark each of the separate items. **(PLEASE "X" ALL THAT APPLY)**
- Fluoride       Vitamin D       None of these   
 Iron       Other Vitamins

**Infant Feeding Questionnaire: 4 Months Feeding and Infant Growth (FIG) Study**



4. During the past two weeks, how often was your baby put to bed with a bottle of formula, breast milk, juice, juice drink, or any other kind of milk?

- At most bedtimes, including naps.....
- At most night bedtimes, but not naps.....
- At most naps, but not night bedtimes.....
- Only occasionally at bedtimes, including naps
- Never .....

5. How often have you added each of the following items to your baby's bottle of formula or pumped (or expressed) breast milk in the past two weeks? If you have not given your baby a bottle in the past two weeks, "X" here  and go to Question 6.

	NEVER	ONLY RARELY	EVERY FEW DAYS	ABOUT ONCE A DAY	AT MOST FEEDINGS	EVERY FEEDING
Vitamins or minerals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Baby cereal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sweetener	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Medicine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (Specify) _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. In the past 2 weeks, have you chewed up food and then given it to your baby, so the food was already chewed up before you fed it to your baby?

- Yes.....  No.....

7. Have you obtained information about feeding babies from any of the following sources for this baby or a previous one? Think of information you have already received about breastfeeding, formula feeding, feeding solid foods, or any other infant feeding information.

	YES	NO
Doctor, nurse, or other health professional	<input type="checkbox"/>	<input type="checkbox"/>
WIC food program	<input type="checkbox"/>	<input type="checkbox"/>
Baby care class or support group	<input type="checkbox"/>	<input type="checkbox"/>
Relative or friend	<input type="checkbox"/>	<input type="checkbox"/>
Books or videos	<input type="checkbox"/>	<input type="checkbox"/>
Newsletters	<input type="checkbox"/>	<input type="checkbox"/>
Newspapers or magazines	<input type="checkbox"/>	<input type="checkbox"/>
Television or radio	<input type="checkbox"/>	<input type="checkbox"/>
Website	<input type="checkbox"/>	<input type="checkbox"/>

**IF YOUR BABY WAS FED FORMULA IN THE PAST 7 DAYS, PLEASE CONTINUE. ALL OTHERS GO TO INSTRUCTION ABOVE QUESTION 14 ON PAGE 3.**

8. How often does your baby drink all of his or her bottle of formula?

- Never  Rarely  Sometimes  Most of the time  Always

**Infant Feeding Questionnaire: 4 Months  
Feeding and Infant Growth (FIG) Study**



9. In the past 7 days, about how many ounces of formula did your baby drink at each feeding?

1 to 2       3 to 4       5 to 6       7 to 8       More than 8

10. How often is your baby encouraged to finish a bottle if he or she stops drinking before the formula is all gone?

Never       Rarely       Sometimes       Most of the time       Always

11. Which formula was fed to your baby in the past 7 days? Infant formulas are listed alphabetically on the Formula List insert along with a group number. Please "X" the group number for each infant formula your baby was fed. **(PLEASE "X" ALL THAT APPLY)**

Group 1     Group 2     Group 3     Group 4     Group 5     Group 6

12. What type of infant formula was your baby fed? **(PLEASE "X" ALL THAT APPLY)**

Ready to feed       Powder from can that makes more than one bottle   
Liquid concentrate       Powder from single serving packs

13. Which of the following describes the iron content of the formula you usually use?

With iron       Low iron

**IF YOUR BABY WAS BREASTFED OR FED BREAST MILK IN A BOTTLE IN THE PAST 7 DAYS, PLEASE CONTINUE. ALL OTHERS GO TO SECTION 2 ON PAGE 4.**

14. Does your baby usually feed from both breasts at each feeding?

Yes       No       Baby is fed only pumped milk  → (GO TO QUESTION 17)

15. Does your baby usually let go of the breast him or herself?

Yes, both breasts       Yes, first breast only       Yes, second breast only       No

16. About how long does an average breastfeeding last?

Less than 10 minutes       20 to 29 minutes       40 to 49 minutes   
10 to 19 minutes       30 to 39 minutes       50 or more minutes

**Infant Feeding Questionnaire: 4 Months  
Feeding and Infant Growth (FIG) Study**



17. In an average 24-hour period, what is the LONGEST time for you, the mother, between breastfeeding or pumping milk? Please count the time from the start of one breastfeeding or pumping session to the start of the next. Please think of the time between feedings during both night and day to find the longest time. **(WRITE IN THE NUMBER OF HOURS AND MINUTES)**

\_\_\_\_\_ HOURS                      **AND**                      \_\_\_\_\_ MINUTES

18. How many times in the past 7 days was your baby fed pumped breast milk to drink? Include breast milk you expressed in any way as pumped milk. (Write in 0 if your baby was not fed expressed or pumped milk to drink.)

\_\_\_\_\_ TIMES → (If 0, GO TO SECTION 2 ON THIS PAGE)

19. On average in the past 7 days how many ounces of pumped breast milk was in the bottle or cup you fed to your baby (before beginning the feeding)?

- |                 |                          |               |                          |                    |                          |
|-----------------|--------------------------|---------------|--------------------------|--------------------|--------------------------|
| 1 ounce or less | <input type="checkbox"/> | 3 to 4 ounces | <input type="checkbox"/> | 7 to 8 ounces..... | <input type="checkbox"/> |
| 2 ounces.....   | <input type="checkbox"/> | 5 to 6 ounces | <input type="checkbox"/> | More than 8 ounces | <input type="checkbox"/> |

20. In the past 7 days, about how many ounces of pumped breast milk did your baby drink at each feeding?

- |        |                          |        |                          |        |                          |        |                          |             |                          |
|--------|--------------------------|--------|--------------------------|--------|--------------------------|--------|--------------------------|-------------|--------------------------|
| 1 to 2 | <input type="checkbox"/> | 3 to 4 | <input type="checkbox"/> | 5 to 6 | <input type="checkbox"/> | 7 to 8 | <input type="checkbox"/> | More than 8 | <input type="checkbox"/> |
|--------|--------------------------|--------|--------------------------|--------|--------------------------|--------|--------------------------|-------------|--------------------------|

21. How often does your baby drink all of his or her cup or bottle of pumped milk?

- |                          |                          |                          |                          |                          |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <b>Never</b>             | <b>Rarely</b>            | <b>Sometimes</b>         | <b>Most of the time</b>  | <b>Always</b>            |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

22. How often is your baby encouraged to finish a cup or bottle if he or she stops drinking before the pumped breast milk is gone?

- |                          |                          |                          |                          |                          |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <b>Never</b>             | <b>Rarely</b>            | <b>Sometimes</b>         | <b>Most of the time</b>  | <b>Always</b>            |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**SECTION 2: HEALTH**

23. Which of the following problems did your baby have during the past 2 weeks? (PLEASE "X" ALL THAT APPLY)

- |                    |                          |                                   |                          |
|--------------------|--------------------------|-----------------------------------|--------------------------|
| Fever.....         | <input type="checkbox"/> | Runny nose or cold.....           | <input type="checkbox"/> |
| Diarrhea.....      | <input type="checkbox"/> | Respiratory Syncytial Virus (RSV) | <input type="checkbox"/> |
| Vomiting.....      | <input type="checkbox"/> | Cough or wheeze.....              | <input type="checkbox"/> |
| Ear Infection..... | <input type="checkbox"/> | Asthma.....                       | <input type="checkbox"/> |
| Colic.....         | <input type="checkbox"/> | Food Allergy.....                 | <input type="checkbox"/> |
| Fussy or irritable | <input type="checkbox"/> | Eczema (atopic dermatitis).....   | <input type="checkbox"/> |
| Reflux.....        | <input type="checkbox"/> | None of these.....                | <input type="checkbox"/> |

**Infant Feeding Questionnaire: 4 Months  
Feeding and Infant Growth (FIG) Study**



24. Did your baby receive any of the following medicines in the past 2 weeks? (Please do not include vitamins or minerals.)

	YES	NO
Antibiotics.....	<input type="checkbox"/>	<input type="checkbox"/>
Other prescription medicines	<input type="checkbox"/>	<input type="checkbox"/>
Non-prescription medicines	<input type="checkbox"/>	<input type="checkbox"/>

25. How much did your baby weigh the last time he or she was weighed at a doctor's visit?

\_\_\_\_\_ POUNDS      \_\_\_\_\_ OUNCES      Don't know.....

26. What was the date of that weight?

\_\_\_\_\_ MONTH      \_\_\_\_\_ DAY      Don't know.....

27. How long was your baby the last time he or she was measured at the doctor's visit?

\_\_\_\_\_ INCHES      Don't know.....

28. What was the date of that measurement?

\_\_\_\_\_ MONTH      \_\_\_\_\_ DAY      Don't know.....

29. Has your baby been hospitalized for any reason or has your baby been taken to a hospital for any outpatient procedure or surgery in the past 4 weeks?

Yes.....      No..... → (GO TO SECTION 3 ON THIS PAGE)

30. How many nights was your baby in the hospital for the most recent problem? (Write 0 if your baby did not stay overnight.)

\_\_\_\_\_ NIGHTS

**SECTION 3: STOPPED BREASTFEEDING**

31. Did you ever breastfeed your baby (or feed your baby your pumped milk)?

Yes..... → (CONTINUE)      No..... → (GO TO SECTION 4 ON PAGE 8)

32. Have you completely stopped breastfeeding and pumping milk for your baby?

Yes..... → (CONTINUE)      No..... → (GO TO SECTION 4 ON PAGE 8)

33. Have you filled out **SECTION 3: Stopped Breastfeeding** on a previous questionnaire since you stopped breastfeeding?

Yes..... → (GO TO SECTION 4 ON PAGE 8)      No..... → (CONTINUE)

**Infant Feeding Questionnaire: 4 Months  
Feeding and Infant Growth (FIG) Study**



34. Did you breastfeed as long as you wanted to?

Yes.....

No.....

35. How old was your baby when you completely stopped breastfeeding and pumping milk?

\_\_\_\_\_ WEEKS OR \_\_\_\_\_ MONTHS

**PLEASE CONTINUE TO THE NEXT PAGE →**



**Infant Feeding Questionnaire: 4 Months  
Feeding and Infant Growth (FIG) Study**



36. How important was each of the following reasons for your decision to stop breastfeeding your baby?  
(PLEASE ANSWER EACH ITEM)

	NOT AT ALL IMPORTANT	NOT VERY IMPORTANT	SOMEWHAT IMPORTANT	VERY IMPORTANT
My baby had trouble sucking or latching on	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My baby became sick and could not breastfeed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My baby began to bite	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My baby lost interest in nursing or began to wean him or herself	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My baby was old enough that the difference between breast milk and formula no longer mattered	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Breast milk alone did not satisfy my baby	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I thought that my baby was not gaining enough weight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A health professional said my baby was not gaining enough weight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I had trouble getting the milk flow to start	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I didn't have enough milk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My nipples were sore, cracked or bleeding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My breasts were overfull or engorged	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My breasts were infected or abscessed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My breasts leaked too much	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Breastfeeding was too painful	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Breastfeeding was too tiring	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I was sick or had to take medicine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Breastfeeding was too inconvenient	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I did not like breastfeeding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wanted to be able to leave my baby for several hours at a time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wanted to go on a weight loss diet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wanted to go back to my usual diet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wanted to smoke again or more than I did while breastfeeding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I had too many household duties	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I could not or did not want to pump or breastfeed at work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pumping milk no longer seemed worth the effort that it required	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I was not present to feed my baby for reasons other than work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wanted or needed someone else to feed the baby	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I did not want to breastfeed in public	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wanted my body back to myself	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I became pregnant or wanted to become pregnant again	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Infant Feeding Questionnaire: 4 Months Feeding and Infant Growth (FIG) Study**



37. Did any of the following people want you to stop breastfeeding? (Mark "does not apply" if you do not have the person listed, such as "employer" if you do not work for pay.)

	YES	NO	DOES NOT APPLY / DON'T KNOW
The baby's father .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your mother .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your mother-in-law.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your grandmother.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Another family member.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A doctor or other health professional	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your employer or supervisor.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

38. Using 1 to mean "Very favorable" and 5 to mean "Very unfavorable," how do you feel about the experience of having breastfed your baby?

VERY FAVORABLE (1)  (2)  (3)  (4)  (5)  VERY UNFAVORABLE

39. Using 1 to mean "Not at all likely" and 5 to mean "Very likely," how likely is it that you would breastfeed again if you had another child?

NOT AT ALL LIKELY (1)  (2)  (3)  (4)  (5)  VERY LIKELY

40. What was the longest time your baby usually slept at night without waking?

2 hours or less   
 3 to 4 hours   
 5 to 6 hours   
 7 to 8 hours   
 8 hours or more

**SECTION 4: FOOD ALLERGIES**

41. Has your baby ever had problems caused by food, such as an allergic reaction, sensitivity, or intolerance?

Yes.....  No.....  → (GO TO SECTION 5 ON PAGE 11)

42. Did your baby have a reaction the first time he or she ate the food?

Yes.....  No.....  Not Sure.....

**Infant Feeding Questionnaire: 4 Months  
Feeding and Infant Growth (FIG) Study**



43. Were the problems caused by...(PLEASE "X" ALL THAT APPLY)

- Food your baby ate (including infant formula).....
- Food your baby was exposed to through breast milk because of something you ate

44. How old was your baby the first time he or she had a problem with food? (Include food your baby reacted to through breast milk.)

- 1 month or less       3 months       5 months
- 2 months       4 months       6 months

45. Did you take your baby to a medical doctor because of these problems with food?

- Yes.....       No.....  → (GO TO QUESTION 48)

46. If your baby was tested or examined for food allergy, what method was used? (PLEASE "X" ALL THAT APPLY)

If your baby was not tested or examined for food allergy "X" here  and go to question 48.

- Parents' description of symptoms.....
- A skin test.....
- A blood test such as RAST, or CAP-RAST.....
- An esophageal or intestinal study.....
- Food elimination (withdrawal of the specific food to see if symptoms disappeared).....
- Food challenge (introduction of a specific food to see if symptoms reappeared).....
- Other (PLEASE SPECIFY).....

47. Was your baby diagnosed by a medical doctor as having an allergy to any food?

- Yes.....       No.....

48. What symptoms of a problem with food has your baby had? (PLEASE "X" ALL THAT APPLY)

- |   |  |
|---|--|
| Congestion..... <input type="checkbox"/>          | Gassiness or stomach cramps <input type="checkbox"/> |
| Runny nose..... <input type="checkbox"/>          | Vomiting..... <input type="checkbox"/>               |
| Asthma or wheezing..... <input type="checkbox"/>  | Diarrhea..... <input type="checkbox"/>               |
| Trouble breathing..... <input type="checkbox"/>   | Constipation..... <input type="checkbox"/>           |
| Coughing..... <input type="checkbox"/>            | Colic..... <input type="checkbox"/>                  |
| Swollen eyes and/or lips <input type="checkbox"/> | Irritability..... <input type="checkbox"/>           |
| Hives or welts..... <input type="checkbox"/>      | Sleepiness..... <input type="checkbox"/>             |
| Flushing..... <input type="checkbox"/>            | Blood in stool..... <input type="checkbox"/>         |
| Skin rash or eczema..... <input type="checkbox"/> | Loss of consciousness..... <input type="checkbox"/>  |
| Spitting up..... <input type="checkbox"/>         |  |

49. How have the symptoms been treated? (PLEASE "X" ALL THAT APPLY)

- Treated in a doctor's office or emergency room
- Treated by emergency medical technician.....
- Admitted to a hospital.....
- Given epinephrine, such as with an EpiPen.....
- Given Benadryl or other anti-histamine.....
- Prescribed an EpiPen or other epinephrine.....
- None of the above.....

**Infant Feeding Questionnaire: 4 Months  
Feeding and Infant Growth (FIG) Study**



50. Please indicate which foods caused a problem for your baby in column 10A, including food your baby reacted to through breast milk. In column 10B, indicated the foods that your baby has been diagnosed as allergic to. (If you baby has had a problem with a food and has been diagnosed as allergic to the food, mark both columns for that food.) **(PLEASE "X" ALL THAT APPLY)**

	10A	10B
	BABY HAD A PROBLEM WITH	DIAGNOSED AS ALLERGIC TO
Cow's milk or other dairy products (including infant formula made with cow milk)	<input type="checkbox"/>	<input type="checkbox"/>
Soy milk or other soy food (including infant formula made with soy)	<input type="checkbox"/>	<input type="checkbox"/>
Eggs	<input type="checkbox"/>	<input type="checkbox"/>
Peanuts, peanut butter, peanut oil	<input type="checkbox"/>	<input type="checkbox"/>
Nuts (such as, almonds, pecans, walnuts)	<input type="checkbox"/>	<input type="checkbox"/>
Sesame seeds, tahini, or sesame seed oil	<input type="checkbox"/>	<input type="checkbox"/>
Fish, shellfish, or other seafood	<input type="checkbox"/>	<input type="checkbox"/>
Beef, chicken or turkey	<input type="checkbox"/>	<input type="checkbox"/>
Wheat, gluten, or wheat starch	<input type="checkbox"/>	<input type="checkbox"/>
Other grain or cereal (such as oats, barely)	<input type="checkbox"/>	<input type="checkbox"/>
Fruit or fruit juice	<input type="checkbox"/>	<input type="checkbox"/>
Vegetable	<input type="checkbox"/>	<input type="checkbox"/>
Other food (SPECIFY) _____	<input type="checkbox"/>	<input type="checkbox"/>

**IF YOUR BABY HAS HAD A PROBLEM WITH INFANT FORMULA, PLEASE CONTINUE. ALL OTHERS GO TO SECTION 5 ON THE NEXT PAGE.**

51. Which infant formula has your baby had a problem with? Infant formulas are listed alphabetically on the insert along with a group number. Please "X" the group number for each formula your baby had a problem with. **(PLEASE "X" ALL THAT APPLY)**

Group 1  
  Group 2  
  Group 3  
  Group 4  
  Group 5  
  Group 6

52. How many of the different formulas listed on the insert has your baby had a problem with?

1   
 2   
 3   
 4   
 5 or more

**Infant Feeding Questionnaire: 4 Months  
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**SECTION 5: OTHER INFORMATION**

53. In the past month, were you or your baby enrolled in the WIC program or did you get WIC food or vouchers for yourself or for your baby? (WIC is a program that gives food to pregnant and nursing women, babies, and young children.) **(PLEASE "X" ALL THAT APPLY)**

- Yes, I was enrolled or got WIC food for myself.....   
Yes, my baby was enrolled or got WIC formula or food .....   
No.....

54. Does your baby have any serious, long-term medical problems?

- No.....       Yes.....  → **(PLEASE EXPLAIN BRIEFLY)** \_\_\_\_\_

55. Date you completed this form: MONTH \_\_\_\_\_ DAY \_\_\_\_\_ YEAR \_\_\_\_\_

**THANK YOU. PLEASE RETURN THIS QUESTIONNAIRE AS SOON AS POSSIBLE IN THE POSTAGE PAID ENVELOPE PROVIDED.**

**Infant Feeding Questionnaire: 5 Months  
Feeding and Infant Growth (FIG) Study**



**BABY'S FEEDING AND HEALTH**

If your baby is regularly cared for by someone else, it is very important that you ask your child care provider to give you information for the feeding questions.

If you have older children, please only think about your youngest baby when you answer the questions.

**SECTION 1: FEEDING**

1. In the past 7 days, how often was your baby fed each food listed below? Include feedings by everyone who feeds the baby and include snacks and night-time feedings.  
If your baby was fed the food once a day or more, write the number of feedings per day in the first column. If your baby was fed the food less than once a day, write the number of feedings per week in the second column. **Fill in only one column for each item.** *If your baby was not fed the food at all during the past seven days, write 0 in the second column.*

	FEEDINGS PER DAY	FEEDINGS PER WEEK
Breast milk	_____	_____
Formula	_____	_____
Cow's milk	_____	_____
Other milk: soy milk, rice milk, goat milk, etc	_____	_____
Other dairy foods: yogurt, cheese, ice cream, pudding, etc	_____	_____
Other soy foods: tofu, frozen soy desserts, etc	_____	_____
100% fruit or 100% vegetable juice	_____	_____
Sweet drinks: juice drinks, soft drinks, soda, sweet tea, Kool-Aid, etc	_____	_____
Baby cereal	_____	_____
Other cereals and starches: breakfast cereals, teething biscuits, crackers, breads, pasta, rice, etc	_____	_____
Fruit	_____	_____
Vegetables	_____	_____
French fries	_____	_____
Meat, chicken, combination dinners	_____	_____
Fish or shellfish	_____	_____
Peanut butter, other peanut foods, or nuts	_____	_____
Eggs	_____	_____
Sweet foods, candy, cookies, cake, etc	_____	_____
Other (PLEASE SPECIFY) _____	_____	_____

2. What type of baby cereal was your baby fed in the past 7 days? **(PLEASE "X" ALL THAT APPLY)**
- Baby was not fed baby cereal       Dry cereal that you add liquid to       Cereal in a jar already mixed
3. Which of the following was your baby given in vitamin or mineral drops or pills at least 3 days a week during the past two weeks? If your baby was given drops or pills that contained more than one of the items listed, please mark each of the separate items. **(PLEASE "X" ALL THAT APPLY)**
- Fluoride       Vitamin D       None of these   
Iron       Other Vitamins

**Infant Feeding Questionnaire: 5 Months Feeding and Infant Growth (FIG) Study**



4. During the past two weeks, how often was your baby put to bed with a bottle of formula, breast milk, juice, juice drink, or any other kind of milk?

- At most bedtimes, including naps.....
- At most night bedtimes, but not naps.....
- At most naps, but not night bedtimes.....
- Only occasionally at bedtimes, including naps
- Never .....

5. How often have you added each of the following items to your baby's bottle of formula or pumped (or expressed) breast milk in the past two weeks? If you have not given your baby a bottle in the past two weeks, "X" here  and go to Question 6.

	NEVER	ONLY RARELY	EVERY FEW DAYS	ABOUT ONCE A DAY	AT MOST FEEDINGS	EVERY FEEDING
Vitamins or minerals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Baby cereal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sweetener	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Medicine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (Specify) _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. In the past 2 weeks, have you chewed up food and then given it to your baby, so the food was already chewed up before you fed it to your baby?

- Yes.....  No.....

**IF YOUR BABY WAS FED FORMULA IN THE PAST 7 DAYS, PLEASE CONTINUE. ALL OTHERS GO TO INSTRUCTION ABOVE QUESTION 13 ON PAGE 3.**

7. How often does your baby drink all of his or her bottle of formula?

- Never  Rarely  Sometimes  Most of the time  Always

8. In the past 7 days, about how many ounces of formula did your baby drink at each feeding?

- 1 to 2  3 to 4  5 to 6  7 to 8  More than 8

9. How often is your baby encouraged to finish a bottle if he or she stops drinking before the formula is all gone?

- Never  Rarely  Sometimes  Most of the time  Always

10. Which formula was fed to your baby in the past 7 days? Infant formulas are listed alphabetically on the Formula List insert along with a group number. Please "X" the group number for each infant formula your baby was fed. **(PLEASE "X" ALL THAT APPLY)**

- Group 1  Group 2  Group 3  Group 4  Group 5  Group 6

**Infant Feeding Questionnaire: 5 Months  
Feeding and Infant Growth (FIG) Study**



11. What type of infant formula was your baby fed? (PLEASE "X" ALL THAT APPLY)

- |                    |                          |   |                          |
|--------------------|--------------------------|---|--------------------------|
| Ready to feed      | <input type="checkbox"/> | Powder from can that makes more than one bottle | <input type="checkbox"/> |
| Liquid concentrate | <input type="checkbox"/> | Powder from single serving packs                | <input type="checkbox"/> |

12. Which of the following describes the iron content of the formula you usually use?

- With iron       Low iron

**IF YOUR BABY WAS BREASTFED OR FED BREAST MILK IN A BOTTLE IN THE PAST 7 DAYS, PLEASE CONTINUE. ALL OTHERS GO TO INSTRUCTION ABOVE QUESTION 22 ON PAGE 4.**

13. Does your baby usually feed from both breasts at each feeding?

- Yes       No       Baby is fed only pumped milk  → (GO TO QUESTION 16)

14. Does your baby usually let go of the breast him or herself?

- Yes, both breasts       Yes, first breast only       Yes, second breast only       No

15. About how long does an average breastfeeding last?

- |                      |                          |                  |                          |                    |                          |
|----------------------|--------------------------|------------------|--------------------------|--------------------|--------------------------|
| Less than 10 minutes | <input type="checkbox"/> | 20 to 29 minutes | <input type="checkbox"/> | 40 to 49 minutes   | <input type="checkbox"/> |
| 10 to 19 minutes     | <input type="checkbox"/> | 30 to 39 minutes | <input type="checkbox"/> | 50 or more minutes | <input type="checkbox"/> |

16. In an average 24-hour period, what is the LONGEST time for you, the mother, between breastfeeding or pumping milk? Please count the time from the start of one breastfeeding or pumping session to the start of the next. Please think of the time between feedings during both night and day to find the longest time. (WRITE IN THE NUMBER OF HOURS AND MINUTES)

\_\_\_\_\_ HOURS      AND      \_\_\_\_\_ MINUTES

17. How many times in the past 7 days was your baby fed pumped breast milk to drink? Include breast milk you expressed in any way as pumped milk. (Write in 0 if your baby was not fed expressed or pumped milk to drink.)

\_\_\_\_\_ TIMES → (IF 0, GO TO INSTRUCTION ABOVE QUESTION 22 ON PAGE 4)

18. On average in the past 7 days how many ounces of pumped breast milk was in the bottle or cup you fed to your baby (before beginning the feeding)?

- |                 |                          |               |                          |                    |                          |
|-----------------|--------------------------|---------------|--------------------------|--------------------|--------------------------|
| 1 ounce or less | <input type="checkbox"/> | 3 to 4 ounces | <input type="checkbox"/> | 7 to 8 ounces..... | <input type="checkbox"/> |
| 2 ounces.....   | <input type="checkbox"/> | 5 to 6 ounces | <input type="checkbox"/> | More than 8 ounces | <input type="checkbox"/> |

19. In the past 7 days, about how many ounces of pumped breast milk did your baby drink at each feeding?

- 1 to 2       3 to 4       5 to 6       7 to 8       More than 8



**Infant Feeding Questionnaire: 5 Months  
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20. How often does your baby drink all of his or her cup or bottle of pumped milk?

- Never**                       **Rarely**                       **Sometimes**                       **Most of the time**                       **Always**

21. How often is your baby encouraged to finish a cup or bottle if he or she stops drinking before the pumped breast milk is gone?

- Never**                       **Rarely**                       **Sometimes**                       **Most of the time**                       **Always**

**IF YOUR BABY IS FED ANY FOODS OR DRINKS BESIDES BREAST MILK OR FORMULA, PLEASE CONTINUE. ALL OTHERS GO TO SECTION 2 ON THE NEXT PAGE.**

22. How important was each of the following reasons for feeding your baby solid food for the very first time? Solid foods are foods such as cereal, baby foods, or table food. (PLEASE ANSWER EACH ITEM) If your baby has not been fed solid food "X" here  and go to Question 24

	NOT AT ALL IMPORTANT	NOT VERY IMPORTANT	SOMEWHAT IMPORTANT	VERY IMPORTANT
My baby was nursing too much	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My baby was drinking too much formula	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My baby seemed hungry a lot of the time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I didn't have enough milk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My baby was not gaining enough weight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wanted to feed my baby something in addition to breast milk or formula	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It would help my baby sleep longer at night	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My baby was old enough to begin eating solid food	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My baby had a medical condition that might be helped by feeding solid food	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A doctor or other health professional said my baby should begin eating solid foods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Friends or relatives said my baby should begin eating solid foods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My baby wanted food I ate or in other ways showed an interest in solid food	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

23. About how often did you introduce new foods (such as specific type of cereal, fruit, vegetable, or meat) to your baby over the past 2 weeks?

- |   |                          |                                  |                          |
|---|--------------------------|----------------------------------|--------------------------|
| No new foods in the past 2 weeks.....   | <input type="checkbox"/> | About 1 new food every 2 days    | <input type="checkbox"/> |
| About 1 new food per week or less often | <input type="checkbox"/> | About 1 new food every day ..... | <input type="checkbox"/> |
| About 1 new food every 4 or 5 days..... | <input type="checkbox"/> | More than 1 new food every day   | <input type="checkbox"/> |
| About 1 new food every 3 days.....      | <input type="checkbox"/> |                                  |                          |

**Infant Feeding Questionnaire: 5 Months  
Feeding and Infant Growth (FIG) Study**



**SECTION 2: HEALTH**

24. Which of the following problems did your baby have during the past 2 weeks? (PLEASE "X" ALL THAT APPLY)

- |                    |                          |                                   |                          |
|--------------------|--------------------------|-----------------------------------|--------------------------|
| Fever.....         | <input type="checkbox"/> | Runny nose or cold.....           | <input type="checkbox"/> |
| Diarrhea.....      | <input type="checkbox"/> | Respiratory Syncytial Virus (RSV) | <input type="checkbox"/> |
| Vomiting.....      | <input type="checkbox"/> | Cough or wheeze.....              | <input type="checkbox"/> |
| Ear Infection..... | <input type="checkbox"/> | Asthma.....                       | <input type="checkbox"/> |
| Colic.....         | <input type="checkbox"/> | Food Allergy.....                 | <input type="checkbox"/> |
| Fussy or irritable | <input type="checkbox"/> | Eczema (atopic dermatitis).....   | <input type="checkbox"/> |
| Reflux.....        | <input type="checkbox"/> | None of these.....                | <input type="checkbox"/> |

25. Did your baby receive any of the following medicines in the past 2 weeks? (Please do not include vitamins or minerals.)

	YES	NO
Antibiotics.....	<input type="checkbox"/>	<input type="checkbox"/>
Other prescription medicines	<input type="checkbox"/>	<input type="checkbox"/>
Non-prescription medicines....	<input type="checkbox"/>	<input type="checkbox"/>

26. How much did your baby weigh the last time he or she was weighed at a doctor's visit?

\_\_\_\_\_ POUNDS      \_\_\_\_\_ OUNCES      Don't know.....

27. What was the date of that weight?

\_\_\_\_\_ MONTH      \_\_\_\_\_ DAY      Don't know.....

28. How long was your baby the last time he or she was measured at the doctor's visit?

\_\_\_\_\_ INCHES      Don't know.....

29. What was the date of that measurement?

\_\_\_\_\_ MONTH      \_\_\_\_\_ DAY      Don't know.....

30. Has your baby been hospitalized for any reason or has your baby been taken to a hospital for any outpatient procedure or surgery in the past 4 weeks?

Yes.....      No..... → (GO TO SECTION 3 ON THE NEXT PAGE)

31. How many nights was your baby in the hospital for the most recent problem? (Write 0 if your baby did not stay overnight.)

\_\_\_\_\_ NIGHTS

**Infant Feeding Questionnaire: 5 Months  
Feeding and Infant Growth (FIG) Study**



**SECTION 3: STOPPED BREASTFEEDING**

32. Did you ever breastfeed your baby (or feed your baby your pumped milk)?

Yes.....  → (CONTINUE)      No.....  → (GO TO SECTION 7 ON PAGE 12)

33. Have you completely stopped breastfeeding and pumping milk for your baby?

Yes.....  → (CONTINUE)      No.....  → (GO TO SECTION 4 ON PAGE 8)

34. Have you filled out **SECTION 3: Stopped Breastfeeding** on a previous questionnaire since you stopped breastfeeding?

Yes.....  → (GO TO SECTION 7 ON PAGE 12)      No.....  → (CONTINUE)

35. Did you breastfeed as long as you wanted to?

Yes.....       No.....

36. How old was your baby when you completely stopped breastfeeding and pumping milk?

\_\_\_\_\_ WEEKS    OR    \_\_\_\_\_ MONTHS

**CONTINUE TO THE NEXT PAGE→**

**Infant Feeding Questionnaire: 5 Months  
Feeding and Infant Growth (FIG) Study**



37. How important was each of the following reasons for your decision to stop breastfeeding your baby?  
(PLEASE ANSWER EACH ITEM)

	NOT AT ALL IMPORTANT	NOT VERY IMPORTANT	SOMEWHAT IMPORTANT	VERY IMPORTANT
My baby had trouble sucking or latching on	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My baby became sick and could not breastfeed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My baby began to bite	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My baby lost interest in nursing or began to wean him or herself	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My baby was old enough that the difference between breast milk and formula no longer mattered	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Breast milk alone did not satisfy my baby	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I thought that my baby was not gaining enough weight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A health professional said my baby was not gaining enough weight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I had trouble getting the milk flow to start	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I didn't have enough milk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My nipples were sore, cracked or bleeding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My breasts were overfull or engorged	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My breasts were infected or abscessed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My breasts leaked too much	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Breastfeeding was too painful	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Breastfeeding was too tiring	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I was sick or had to take medicine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Breastfeeding was too inconvenient	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I did not like breastfeeding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wanted to be able to leave my baby for several hours at a time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wanted to go on a weight loss diet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wanted to go back to my usual diet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wanted to smoke again or more than I did while breastfeeding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I had too many household duties	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I could not or did not want to pump or breastfeed at work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pumping milk no longer seemed worth the effort that it required	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I was not present to feed my baby for reasons other than work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wanted or needed someone else to feed the baby	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I did not want to breastfeed in public	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wanted my body back to myself	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I became pregnant or wanted to become pregnant again	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Infant Feeding Questionnaire: 5 Months Feeding and Infant Growth (FIG) Study**



38. Did any of the following people want you to stop breastfeeding? (Mark "does not apply" if you do not have the person listed, such as "employer" if you do not work for pay.)

	YES	NO	DOES NOT APPLY / DON'T KNOW
The baby's father .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your mother .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your mother-in-law.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your grandmother.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Another family member.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A doctor or other health professional	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your employer or supervisor.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

39. Using 1 to mean "Very favorable" and 5 to mean "Very unfavorable," how do you feel about the experience of having breastfed your baby?

<u>VERY FAVORABLE</u>						<u>VERY UNFAVORABLE</u>
(1)	(2)	(3)	(4)		(5)	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	

40. Using 1 to mean "Not at all likely" and 5 to mean "Very likely," how likely is it that you would breastfeed again if you had another child?

<u>NOT AT ALL LIKELY</u>					<u>VERY LIKELY</u>
(1)	(2)	(3)	(4)		(5)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>

**SECTION 4: BREASTFEEDING**

41. In the past 3 months, did you breastfeed your baby (or feed your baby your pumped milk)?

Yes.....  → (CONTINUE)                      No.....  → (GO TO SECTION 7 ON PAGE 12)

42. Using 1 to mean "Very uncomfortable," and 5 to mean "Very comfortable," how comfortable would you be in the following situations?

	<u>VERY UNCOMFORTABLE</u>				<u>VERY COMFORTABLE</u>
	(1)	(2)	(3)	(4)	(5)
Nursing your baby in the presence of close women friends	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nursing your baby in the presence of men and women who are close friends	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nursing your baby in the presence of men and women who are not close friends	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Infant Feeding Questionnaire: 5 Months Feeding and Infant Growth (FIG) Study**



43. Have you breastfed your baby or pumped breast milk in the past 7 days?

Yes.....  → (CONTINUE)                      No.....  → (GO TO SECTION 5 ON PAGE 10)

44. How old do you think your baby will be when you completely stop breastfeeding?

5 months	<input type="checkbox"/>	8 months	<input type="checkbox"/>	11 months	<input type="checkbox"/>
6 months	<input type="checkbox"/>	9 months	<input type="checkbox"/>	12 months	<input type="checkbox"/>
7 months	<input type="checkbox"/>	10 months	<input type="checkbox"/>	More than 12 months	<input type="checkbox"/>

45. Using 1 to mean "Not at all Confident" and 5 to mean "Very Confident," how confident are you that you will be able to breastfeed until the baby is the age you marked in Question 42?

<b>NOT AT ALL CONFIDENT</b>					<b>VERY CONFIDENT</b>
(1)		(2)		(3)	
<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
				(4)	(5)
				<input type="checkbox"/>	<input type="checkbox"/>

46. Did you work for pay any time during the past 4 weeks?

Yes.....                       No.....  → (GO TO THE INSTRUCTION ABOVE QUESTION 48 ON THIS PAGE)

47. Which of the following circumstances describe your situation during the past 4 weeks? (If you have stopped breastfeeding or stopped working for pay, please answer for the time you were breastfeeding and working. If you have worked for less than 4 weeks, please answer for the time you have been working.) (PLEASE "X" ALL THAT APPLY)

I keep my baby with me while I work and breastfeed during my work day.....	<input type="checkbox"/>
I go to my baby and breastfeed him or her during my work day.....	<input type="checkbox"/>
My baby is brought to me to breastfeed during my work day.....	<input type="checkbox"/>
I pump milk during my work day and save it for my baby to drink later.....	<input type="checkbox"/>
I pump milk during my work day, but I do not save it for my baby to drink later.....	<input type="checkbox"/>
I neither pump milk nor breastfeed during my work day.....	<input type="checkbox"/>

**IF YOU ANSWERED THE STOPPED BREASTFEEDING SECTION ON THIS QUESTIONNAIRE, GO TO SECTION 5: BREAST PUMPS ON THE NEXT PAGE.**

48. Was your baby fed formula to drink in the past 2 weeks, by you or anyone else?

Yes.....                       No.....  → (GO TO SECTION 5 ON PAGE 10)

**CONTINUE TO THE NEXT PAGE→**

**Infant Feeding Questionnaire: 5 Months  
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49. How important was each of the following reasons for feeding your baby formula? **(PLEASE ANSWER EACH ITEM)**

	NOT AT ALL IMPORTANT	NOT VERY IMPORTANT	SOMEWHAT IMPORTANT	VERY IMPORTANT
My baby had trouble sucking or latching on	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My baby became sick and could not breastfeed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My baby lost interest in nursing or began to wean him or herself	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My baby was old enough that the difference between breast milk and formula no longer mattered	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Breast milk alone did not satisfy my baby	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I thought that my baby was not gaining enough weight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A health professional said my baby was not gaining enough weight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I didn't have enough milk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My nipples were sore, cracked, or bleeding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My breasts were infected or abscessed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Breastfeeding was too painful	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Breastfeeding was too tiring	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I was sick or had to take medicine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Breastfeeding was too inconvenient	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wanted to be able to leave my baby for several hours at a time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I could not or did not want to pump or breastfeed at work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pumping milk no longer seemed worth the effort it required	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I was not present to feed my baby for reasons other than work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wanted or needed someone else to feed my baby	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Someone else wanted to feed the baby	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I did not want to breastfeed in public	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**SECTION 5: BREAST PUMPS**

50. In the past 3 months, have you pumped or tried to pump milk? (Include expressing breast milk in any way as pumping milk.)

Yes, but I did not get any milk       Yes, and I got milk       No  → GO TO SECTION 7 ON PAGE 12

51. How old was your baby the first time you pumped or tried to pump milk?

\_\_\_\_\_ DAYS      OR      \_\_\_\_\_ WEEKS

52. How have you pumped or expressed milk in the past 3 months? **(PLEASE "X" ALL THAT APPLY)**

- Electric breast pump.....
- Combination electric and battery operated breast pump
- Battery operated pump .....
- Manual breast pump (no batteries, no cord to plug in)...
- By hand (without using a pump).....

**Infant Feeding Questionnaire: 5 Months Feeding and Infant Growth (FIG) Study**



53. Have you had any of the following problems with a breast pump that you used to express milk since the baby was born? (PLEASE "X" ALL THAT APPLY)

- Pressure or suction from the pump was hard to release
- Pump was uncomfortable or painful to use even though it did not cause injury
- Pump had a bad seal or milk got into the motor or other place it should not be
- Could not get pump to work or to express any milk
- Pump worked, but did not get enough/much milk
- Pump worked, but it took too long to get enough milk
- Pump worked for a while but then quit working
- Pump had another problem (SPECIFY) \_\_\_\_\_
- No Problems

**SECTION 6: PUMPING OR EXPRESSING MILK**

54. During the past 2 weeks, how many times did you pump milk? (Include expressing breast milk in any way as pumping milk.)

\_\_\_\_\_ TIMES IN PAST TWO WEEKS → (IF 0, GO TO SECTION 7 ON PAGE 12)

55. Are you now pumping milk on a regular schedule?

Yes.....  No.....  → (GO TO QUESTION 57)

56. How old was your baby when you first began pumping milk on a regular schedule?

\_\_\_\_\_ DAYS OR \_\_\_\_\_ WEEKS OR \_\_\_\_\_ MONTHS

57. On average, in the past 2 weeks, how many ounces of milk did you pump each time?

- 1 ounce or less  3 to 4 ounces  7 to 8 ounces.....
- 2 ounces.....  5 to 6 ounces  More than 8 ounces

58. For what reasons have you pumped milk in the past 2 weeks? (PLEASE "X" ALL THAT APPLY)

- To relieve engorgement .....
- Because my nipples were too sore to nurse.....
- To increase my milk supply .....
- To get milk for someone else to feed to my baby.....
- For me to feed my baby when I do not want to breastfeed or when my baby cannot breastfeed .....
- To keep my milk supply up when my baby could not nurse (such as while you were away from your baby or when your baby was too sick to nurse).....
- To mix with cereal or other food.....
- To have an emergency supply of milk .....
- To donate to a baby other than my own.....



**Infant Feeding Questionnaire: 5 Months Feeding and Infant Growth (FIG) Study**



59. In the past 2 weeks, has your baby been fed formula mixed with breast milk in the same bottle?

Yes.....  No.....  → (GO TO SECTION 7 ON THIS PAGE)

60. How were the formula and breast milk usually mixed? (PLEASE "X" ALL THAT APPLY)

- Added formula powder to breast milk.....
- Added formula concentrate to breast milk.....
- Added prepared (mixed up) formula or ready-to-feed formula to breast milk.....

**SECTION 7: INFANT FORMULA**

61. Was your baby fed infant formula in the past 2 weeks, by you or anyone else?

Yes.....  No.....  → (GO TO SECTION 8 ON PAGE 13)

62. How did you decide to use the formula you fed your baby in the past 7 days?

- |   |   |
|---|---|
| A doctor or other health professional recommended the formula..... <input type="checkbox"/> | I chose a formula labeled as useful for a problem my baby had..... <input type="checkbox"/> |
| I chose the same formula fed to my baby at the hospital..... <input type="checkbox"/>       | I use the formula given by WIC..... <input type="checkbox"/>                                |
| I heard that the formula is better for my baby in some way..... <input type="checkbox"/>    | I chose the same formula I fed an older child..... <input type="checkbox"/>                 |
| I chose the formula I received samples or coupons for..... <input type="checkbox"/>         | Friends or relatives recommended the formula..... <input type="checkbox"/>                  |
| I saw an advertisement for the formula and wanted to buy it..... <input type="checkbox"/>   | I chose a formula based on low price..... <input type="checkbox"/>                          |

63. Did you discuss your choice of formula with the baby's doctor?

Yes.....  No.....

64. During the past 2 weeks, how many times have you switched the formula you feed your baby?

None  → GO TO SECTION 8    1     2     3     4     5 or more

65. Which formulas did you stop using in the past 2 weeks? Infant formulas are listed alphabetically on the Formula List insert along with a group number. Please "X" the group number for each infant formula you stopped using. (PLEASE "X" ALL THAT APPLY)

Group 1     Group 2     Group 3     Group 4     Group 5     Group 6

**Infant Feeding Questionnaire: 5 Months  
Feeding and Infant Growth (FIG) Study**



66. Did you switch formulas because your baby had a problem with the formula you were using?

Yes.....

No.....  → (GO TO SECTION 8 ON THIS PAGE)

67. What type of problem did your baby have with the formula(s)? (PLEASE "X" ALL THAT APPLY)

An allergic reaction or intolerance   
Constipation.....   
Diarrhea.....   
Too much mucus.....

Too much gas.....   
Too much spit up.....   
Vomiting.....   
Other problems (Please  
specify \_\_\_\_\_)

**SECTION 8: OTHER INFORMATION**

68. In the past month, were you or your baby enrolled in the WIC program or did you get WIC food or vouchers for yourself or for your baby? (WIC is a program that gives food to pregnant and nursing women, babies, and young children.) (PLEASE "X" ALL THAT APPLY)

Yes, I was enrolled or got WIC food for myself.....

Yes, my baby was enrolled or got WIC formula or food.....

No.....

69. What was the longest time your baby usually slept at night without waking?

2 hours or less   
3 to 4 hours   
5 to 6 hours   
7 to 8 hours   
8 hours or more

70. Does your baby have any serious, long-term medical problems?

No.....

Yes.....  → (PLEASE EXPLAIN BRIEFLY) \_\_\_\_\_

71. Date you completed this form: MONTH \_\_\_\_\_ DAY \_\_\_\_\_ YEAR \_\_\_\_\_

**THANK YOU. PLEASE RETURN THIS QUESTIONNAIRE AS SOON AS POSSIBLE IN THE POSTAGE PAID  
ENVELOPE PROVIDED.**

**Infant Feeding Questionnaire: 6 Months  
Feeding and Infant Growth (FIG) Study**



**BABY'S FEEDING AND HEALTH**

If your baby is regularly cared for by someone else, it is very important that you ask your child care provider to give you information for the feeding questions.

If you have older children, please only think about your youngest baby when you answer the questions.

**SECTION 1: FEEDING**

1. In the past 7 days, how often was your baby fed each food listed below? Include feedings by everyone who feeds the baby and include snacks and night-time feedings.  
If your baby was fed the food once a day or more, write the number of feedings per day in the first column. If your baby was fed the food less than once a day, write the number of feedings per week in the second column. **Fill in only one column for each item.** *If your baby was not fed the food at all during the past seven days, write 0 in the second column.*

	FEEDINGS PER DAY	FEEDINGS PER WEEK
Breast milk	_____	_____
Formula	_____	_____
Cow's milk	_____	_____
Other milk: soy milk, rice milk, goat milk, etc	_____	_____
Other dairy foods: yogurt, cheese, ice cream, pudding, etc	_____	_____
Other soy foods: tofu, frozen soy desserts, etc	_____	_____
100% fruit or 100% vegetable juice	_____	_____
Sweet drinks: juice drinks, soft drinks, soda, sweet tea, Kool-Aid, etc	_____	_____
Baby cereal	_____	_____
Other cereals and starches: breakfast cereals, teething biscuits, crackers, breads, pasta, rice, etc	_____	_____
Fruit	_____	_____
Vegetables	_____	_____
French fries	_____	_____
Meat, chicken, combination dinners	_____	_____
Fish or shellfish	_____	_____
Peanut butter, other peanut foods, or nuts	_____	_____
Eggs	_____	_____
Sweet foods, candy, cookies, cake, etc	_____	_____
Other (PLEASE SPECIFY) _____	_____	_____

2. In the past 7 days, how many times was your baby usually fed in a 24-hour period? Please include breast feedings, bottles, meals, snacks, and night-time feedings?

1 to 2	<input type="checkbox"/>	6	<input type="checkbox"/>
3	<input type="checkbox"/>	7	<input type="checkbox"/>
4	<input type="checkbox"/>	8 or more	<input type="checkbox"/>
5	<input type="checkbox"/>		

**Infant Feeding Questionnaire: 6 Months  
Feeding and Infant Growth (FIG) Study**



3. Which of the following was your baby given in vitamin or mineral drops or pills at least 3 days a week during the past two weeks? If your baby was given drops or pills that contained more than one of the items listed, please mark each of the separate items. **(PLEASE "X" ALL THAT APPLY)**

Fluoride       Vitamin D       None of these   
 Iron       Other Vitamins

4. During the past two weeks, how often was your baby put to bed with a bottle of formula, breast milk, juice, juice drink, or any other kind of milk?

At most bedtimes, including naps.....   
 At most night bedtimes, but not naps.....   
 At most naps, but not night bedtimes.....   
 Only occasionally at bedtimes, including naps   
 Never.....

5. How often have you added each of the following items to your baby's bottle of formula or pumped (or expressed) breast milk in the past two weeks? If you have not given your baby a bottle in the past two weeks, "X" here  and go to Question 6.

	NEVER	ONLY RARELY	EVERY FEW DAYS	ABOUT ONCE A DAY	AT MOST FEEDINGS	EVERY FEEDING
Vitamins or minerals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Baby cereal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sweetener	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Medicine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (Specify)_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. In the past 2 weeks, have you chewed up food and then given it to your baby, so the food was already chewed up before you fed it to your baby?

Yes.....       No.....

**IF YOUR BABY WAS FED FORMULA IN THE PAST 7 DAYS, PLEASE CONTINUE. ALL OTHERS GO TO INSTRUCTION ABOVE QUESTION 13 ON PAGE 3.**

7. How often does your baby drink all of his or her bottle of formula?

Never       Rarely       Sometimes       Most of the time       Always

8. In the past 7 days, about how many ounces of formula did your baby drink at each feeding?

1 to 2       3 to 4       5 to 6       7 to 8       More than 8

9. How often is your baby encouraged to finish a bottle if he or she stops drinking before the formula is all gone?

Never       Rarely       Sometimes       Most of the time       Always

**Infant Feeding Questionnaire: 6 Months Feeding and Infant Growth (FIG) Study**



10. Which formula was fed to your baby in the past 7 days? Infant formulas are listed alphabetically on the Formula List insert along with a group number. Please "X" the group number for each infant formula your baby was fed. **(PLEASE "X" ALL THAT APPLY)**

**Group 1**  
  **Group 2**  
  **Group 3**  
  **Group 4**  
  **Group 5**  
  **Group 6**

11. What type of infant formula was your baby fed? **(PLEASE "X" ALL THAT APPLY)**

Ready to feed       Powder from can that makes more than one bottle   
 Liquid concentrate       Powder from single serving packs

12. Which of the following describes the iron content of the formula you usually use?

With iron       Low iron

**IF YOUR BABY WAS BREASTFED OR FED BREAST MILK IN A BOTTLE IN THE PAST 7 DAYS, PLEASE CONTINUE. ALL OTHERS GO TO THE INSTRUCTION ABOVE QUESTION 22 ON PAGE 4.**

13. Does your baby usually feed from both breasts at each feeding?

Yes       No       Baby is fed only pumped milk  → (GO TO QUESTION 16)

14. Does your baby usually let go of the breast him or herself?

Yes, both breasts       Yes, first breast only       Yes, second breast only       No

15. About how long does an average breastfeeding last?

Less than 10 minutes       20 to 29 minutes       40 to 49 minutes   
 10 to 19 minutes       30 to 39 minutes       50 or more minutes

16. In an average 24-hour period, what is the **LONGEST** time for you, the mother, between breastfeeding or pumping milk? Please count the time from the start of one breastfeeding or pumping session to the start of the next. Please think of the time between feedings during both night and day to find the longest time. **(WRITE IN THE NUMBER OF HOURS AND MINUTES)**

\_\_\_\_\_ HOURS      **AND**      \_\_\_\_\_ MINUTES

17. How many times in the past 7 days was your baby fed pumped breast milk to drink? Include breast milk you expressed in any way as pumped milk. (Write in 0 if your baby was not fed expressed or pumped milk to drink.)

\_\_\_\_\_ TIMES (IF 0, GO TO INSTRUCTIONS ABOVE QUESTION 22)

**Infant Feeding Questionnaire: 6 Months  
Feeding and Infant Growth (FIG) Study**



18. On average in the past 7 days how many ounces of pumped breast milk was in the bottle or cup you fed to your baby (before beginning the feeding)?

- 1 ounce or less       3 to 4 ounces       7 to 8 ounces.....   
 2 ounces.....       5 to 6 ounces       More than 8 ounces

19. In the past 7 days, about how many ounces of pumped breast milk did your baby drink at each feeding?

- 1 to 2       3 to 4       5 to 6       7 to 8       More than 8

20. How often does your baby drink all of his or her cup or bottle of pumped milk?

- Never       Rarely       Sometimes       Most of the time       Always

21. How often is your baby encouraged to finish a cup or bottle if he or she stops drinking before the pumped breast milk is gone?

- Never       Rarely       Sometimes       Most of the time       Always

**IF YOUR BABY IS FED ANY FOODS OR DRINKS BESIDES BREAST MILK OR FORMULA, PLEASE CONTINUE. ALL OTHERS GO TO SECTION 2 ON PAGE 5.**

22. How important was each of the following reasons for feeding your baby solid food for the very first time? Solid foods are foods such as cereal, baby foods, or table food. **(PLEASE ANSWER EACH ITEM)** If your baby has not been fed solid food "X" here  and go to Question 24.

	NOT AT ALL IMPORTANT	NOT VERY IMPORTANT	SOMEWHAT IMPORTANT	VERY IMPORTANT
My baby was nursing too much	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My baby was drinking too much formula	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My baby seemed hungry a lot of the time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I didn't have enough milk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My baby was not gaining enough weight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wanted to feed my baby something in addition to breast milk or formula	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It would help my baby sleep longer at night	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My baby was old enough to begin eating solid food	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My baby had a medical condition that might be helped by feeding solid food	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A doctor or other health professional said my baby should begin eating solid foods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Friends or relatives said my baby should begin eating solid foods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My baby wanted food I ate or in other ways showed an interest in solid food	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Infant Feeding Questionnaire: 6 Months  
Feeding and Infant Growth (FIG) Study**



23. About how often did you introduce new foods (such as specific type of cereal, fruit, vegetable, or meat) to your baby over the past 2 weeks?

- |   |                          |                                  |                          |
|---|--------------------------|----------------------------------|--------------------------|
| No new foods in the past 2 weeks.....   | <input type="checkbox"/> | About 1 new food every 2 days    | <input type="checkbox"/> |
| About 1 new food per week or less often | <input type="checkbox"/> | About 1 new food every day ..... | <input type="checkbox"/> |
| About 1 new food every 4 or 5 days..... | <input type="checkbox"/> | More than 1 new food every day   | <input type="checkbox"/> |
| About 1 new food every 3 days.....      | <input type="checkbox"/> |                                  |                          |

**SECTION 2: HEALTH**

24. Which of the following problems did your baby have during the past 2 weeks? (PLEASE "X" ALL THAT APPLY)

- |                    |                          |                                   |                          |
|--------------------|--------------------------|-----------------------------------|--------------------------|
| Fever.....         | <input type="checkbox"/> | Runny nose or cold.....           | <input type="checkbox"/> |
| Diarrhea.....      | <input type="checkbox"/> | Respiratory Syncytial Virus (RSV) | <input type="checkbox"/> |
| Vomiting.....      | <input type="checkbox"/> | Cough or wheeze.....              | <input type="checkbox"/> |
| Ear Infection..... | <input type="checkbox"/> | Asthma.....                       | <input type="checkbox"/> |
| Colic.....         | <input type="checkbox"/> | Food Allergy.....                 | <input type="checkbox"/> |
| Fussy or irritable | <input type="checkbox"/> | Eczema (atopic dermatitis).....   | <input type="checkbox"/> |
| Reflux.....        | <input type="checkbox"/> | None of these.....                | <input type="checkbox"/> |

25. Did your baby receive any of the following medicines in the past 2 weeks? (Please do not include vitamins or minerals.)

	YES	NO
Antibiotics.....	<input type="checkbox"/>	<input type="checkbox"/>
Other prescription medicines	<input type="checkbox"/>	<input type="checkbox"/>
Non-prescription medicines	<input type="checkbox"/>	<input type="checkbox"/>

26. How much did your baby weigh the last time he or she was weighed at a doctor's visit?

\_\_\_\_\_ POUNDS      \_\_\_\_\_ OUNCES      Don't know.....

27. What was the date of that weight?

\_\_\_\_\_ MONTH      \_\_\_\_\_ DAY      Don't know.....

28. How long was your baby the last time he or she was measured at the doctor's visit?

\_\_\_\_\_ INCHES      Don't know.....

29. What was the date of that measurement?

\_\_\_\_\_ MONTH      \_\_\_\_\_ DAY      Don't know.....

30. Has your baby been hospitalized for any reason or has your baby been taken to a hospital for any outpatient procedure or surgery in the past 4 weeks?

Yes.....      No..... → (GO TO SECTION 3 ON THE NEXT PAGE)

**Infant Feeding Questionnaire: 6 Months  
Feeding and Infant Growth (FIG) Study**



31. How many nights was your baby in the hospital for the most recent problem? (*Write 0 if your baby did not stay overnight.*)

\_\_\_\_\_ NIGHTS

**SECTION 3: STOPPED BREASTFEEDING**

32. Did you ever breastfeed your baby (*or feed your baby your pumped milk*)?

Yes.....  → (CONTINUE)      No.....  → (GO TO SECTION 4 ON PAGE 8)

33. Have you completely stopped breastfeeding and pumping milk for your baby?

Yes.....  → (CONTINUE)      No.....  → (GO TO SECTION 4 ON PAGE 8)

34. Have you filled out **SECTION 3: Stopped Breastfeeding** on a previous questionnaire since you stopped breastfeeding?

Yes.....  → (GO TO SECTION 4 ON PAGE 8)      No.....  → (CONTINUE)

35. Did you breastfeed as long as you wanted to?

Yes.....       No.....

36. How old was your baby when you completely stopped breastfeeding and pumping milk?

\_\_\_\_\_ WEEKS (If younger than 2 weeks)      OR      \_\_\_\_\_ MONTHS

**CONTINUE TO THE NEXT PAGE →**



**Infant Feeding Questionnaire: 6 Months  
Feeding and Infant Growth (FIG) Study**



37. How important was each of the following reasons for your decision to stop breastfeeding your baby?  
(PLEASE ANSWER EACH ITEM)

	NOT AT ALL IMPORTANT	NOT VERY IMPORTANT	SOMEWHAT IMPORTANT	VERY IMPORTANT
My baby had trouble sucking or latching on	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My baby became sick and could not breastfeed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My baby began to bite	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My baby lost interest in nursing or began to wean him or herself	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My baby was old enough that the difference between breast milk and formula no longer mattered	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Breast milk alone did not satisfy my baby	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I thought that my baby was not gaining enough weight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A health professional said my baby was not gaining enough weight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I had trouble getting the milk flow to start	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I didn't have enough milk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My nipples were sore, cracked or bleeding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My breasts were overfull or engorged	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My breasts were infected or abscessed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My breasts leaked too much	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Breastfeeding was too painful	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Breastfeeding was too tiring	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I was sick or had to take medicine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Breastfeeding was too inconvenient	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I did not like breastfeeding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wanted to be able to leave my baby for several hours at a time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wanted to go on a weight loss diet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wanted to go back to my usual diet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wanted to smoke again or more than I did while breastfeeding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I had too many household duties	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I could not or did not want to pump or breastfeed at work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pumping milk no longer seemed worth the effort that it required	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I was not present to feed my baby for reasons other than work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wanted or needed someone else to feed the baby	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I did not want to breastfeed in public	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wanted my body back to myself	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I became pregnant or wanted to become pregnant again	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Infant Feeding Questionnaire: 6 Months  
Feeding and Infant Growth (FIG) Study**



38. Did any of the following people want you to stop breastfeeding? (Mark "does not apply" if you do not have the person listed, such as "employer" if you do not work for pay.)

	YES	NO	DOES NOT APPLY / DON'T KNOW
The baby's father .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your mother .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your mother-in-law.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your grandmother.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Another family member.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A doctor or other health professional	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your employer or supervisor.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

39. Using 1 to mean "Very favorable" and 5 to mean "Very unfavorable," how do you feel about the experience of having breastfed your baby?

<b>VERY FAVORABLE</b>					<b>VERY UNFAVORABLE</b>
(1)	(2)	(3)	(4)		(5)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>

40. Using 1 to mean "Not at all likely" and 5 to mean "Very likely," how likely is it that you would breastfeed again if you had another child?

<b>NOT AT ALL LIKELY</b>					<b>VERY LIKELY</b>
(1)	(2)	(3)	(4)		(5)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>

**SECTION 4: EMPLOYMENT**

41. Did you work for pay any time during the past 4 weeks?

Yes.....                       No.....  → (GO TO SECTION 5 ON PAGE 10)

42. How old was your baby when you began working after your delivery? (If you are not sure, give your best estimate).

\_\_\_\_\_ MONTHS AND \_\_\_\_\_ WEEKS

43. How many hours per week did you usually work at your job during the past 4 weeks? (Answer for whatever time you have been working if less than 4 weeks) (If you work at two or more jobs, answer for the total number of hours you work)

1 to 9 hours per week	<input type="checkbox"/>	30 to 34 hours per week	<input type="checkbox"/>
10 to 19 hours per week	<input type="checkbox"/>	35 to 40 hours per week	<input type="checkbox"/>
20 to 29 hours per week	<input type="checkbox"/>	More than 40 hours per week	<input type="checkbox"/>

**Infant Feeding Questionnaire: 6 Months Feeding and Infant Growth (FIG) Study**



44. What type of setting do you work in?

- A building (for example, office building, store or other retail building, restaurant, hospital, school).....
- A private residence (for example your home or someone else's home).....
- A vehicle (for example, transportation, delivery, flight attendant, pilot)....
- Outdoors (for example farmer, outdoor repair, gardener).....
- Other.....

45. Using 1 to mean "None" and 5 to mean "Very much," how much satisfaction do you get from your paid work?

- NONE
2
3
4
VERY MUCH  
1

46. What do you do with your baby while you are working? (PLEASE "X" ALL THAT APPLY)

- My baby is cared for by a family member.....
- My baby is cared for by someone not in my family.....
- I keep my baby with me while I work at home.....
- I keep my baby with me while I work outside my home

47. In your opinion, how supportive of breastfeeding is your place of employment?

- Not at all supportive
- Not too supportive
- Somewhat supportive
- Very supportive

48. Did you breastfeed for any time during the past four weeks?

- Yes.....  No.....  → (GO TO SECTION 5 ON PAGE 10)

49. Which of the following circumstances describe your situation during the past 4 weeks? (If you have stopped breastfeeding, please answer for the time you were breastfeeding) (PLEASE "X" ALL THAT APPLY)

- I keep my baby with me while I work and breastfeed during my work day.....
- I go to my baby and breastfeed him or her during my work day.....
- My baby is brought to me to breastfeed during my work day.....
- I pump milk during my work day and save it for my baby to drink later.....
- I pump milk during my work day, but I do not save it for my baby to drink later
- I neither pump milk nor breastfeed during my work day.....

50. Have you had any of the following experiences during the past 4 weeks? Mark "No" if the item does not describe your circumstances, such as if you have no coworkers for the first item. (If you have stopped breastfeeding, please answer for the time you were breastfeeding.)

	YES	NO
A coworker made negative comments or complained about me breastfeeding	<input type="checkbox"/>	<input type="checkbox"/>
My employer or my supervisor made negative comments or complained to me about breastfeeding	<input type="checkbox"/>	<input type="checkbox"/>
It was hard for me to arrange break time for breastfeeding or pumping milk	<input type="checkbox"/>	<input type="checkbox"/>
It was hard for me to find a place to breastfeed or pump milk	<input type="checkbox"/>	<input type="checkbox"/>
It was hard for me to arrange a place to store pumped breast milk	<input type="checkbox"/>	<input type="checkbox"/>
It was hard for me to carry the equipment I needed to pump milk at work	<input type="checkbox"/>	<input type="checkbox"/>
I felt worried about keeping my job because of breastfeeding	<input type="checkbox"/>	<input type="checkbox"/>
I felt worried about continuing to breastfeed because of my job	<input type="checkbox"/>	<input type="checkbox"/>
I felt embarrassed among coworkers, my supervisor, or my employer because of breastfeeding	<input type="checkbox"/>	<input type="checkbox"/>

**Infant Feeding Questionnaire: 6 Months  
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**SECTION 5: CHILDCARE**

51. Was your baby cared for by someone other than you on a regular schedule during the past 4 weeks? That is, did someone else usually keep your baby at least once a week for 3 or more hours at a time? (include arrangements in which the exact day or time may change if the child care usually occurred at least once a week).  
**Please mark "yes" if your baby is regularly cared for by anyone other than you, including the baby's father or other close relative.**

Yes.....

No.....  → (GO TO SECTION 6 ON PAGE 11)

52. Who usually kept your baby during the past 4 weeks? (PLEASE "X" ALL THAT APPLY)

Baby's father   
Baby's grandparent(s)

Other family member(s)   
Someone not in your family

53. Where did the childcare usually occur? (PLEASE "X" ALL THAT APPLY)

Baby's home with no other children.....   
Baby's home with other children or baby's  
brothers or sisters.....   
Day care or child care center.....

Other private home with no other children.....   
Other private home with older children or baby's  
brothers or sisters.....   
Other.....

54. How many days in an average week was your baby cared for by your regularly scheduled child care provider(s)? (Include days your baby was cared for by family members if they regularly provide child care while you are away from the baby)

\_\_\_\_\_ DAYS PER WEEK

55. On an average day when your baby was with your regular child care provider(s), how many hours was he or she with the child care provider(s)?

\_\_\_\_\_ HOURS

**FOR QUESTIONS 56-58, IF YOUR ANSWER IS DIFFERENT FOR DIFFERENT CHILD CARE PROVIDERS, ANSWER FOR THE ONE WHO FED YOUR BABY THE MOST TIMES PER WEEK.**

56. In your opinion, how supportive of breastfeeding is your child care provider?

Not at all supportive   
Not too supportive

Somewhat supportive   
Very supportive

Don't know

57. On an average day when your baby was with your child care provider, how many times did the child care provider feed him or her? Please include feedings of breast milk, formula, and all other foods, and include meals and snacks.

\_\_\_\_\_ TIMES PER DAY FED BABY None  → (GO TO INSTRUCTIONS AFTER QUESTION 58)

**Infant Feeding Questionnaire: 6 Months  
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58. How often did you find out what your regularly scheduled child care provider fed your baby?

Seldom or never  Sometimes  Always or most of the time

**IF YOUR BABY IS ONLY CARED FOR IN YOUR HOME, GO TO SECTION 6 THIS PAGE.**

**ANSWER QUESTIONS 59-60 FOR YOUR CHILD CARE THAT IS OUTSIDE OF YOUR HOME. IF YOU HAVE MORE THAN ONE CHILD CARE PROVIDER OUTSIDE OF YOUR HOME, ANSWER FOR THE ONE WHO FEEDS YOUR BABY THE MOST TIMES PER WEEK.**

59. Under your regular child care arrangements in the past 4 weeks, who usually provided the formula, if any, and food that your baby drank and ate? Include meals and snacks. **(PLEASE "X" ALL THAT APPLY)**

	THE CHILD CARE PROVIDER	YOU, THE MOTHER	SOMEONE ELSE	BABY WAS NOT FED THIS ITEM
Who provided the baby's formula?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Who provided the baby's food for meals?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Who provided the baby's snacks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

60. Does your child care provider:

	YES	NO	DON'T KNOW
Feed a mother's pumped breast milk to her baby?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Allow mothers to breastfeed at the child care place before or after work?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Allow mothers to come in and breastfeed during their lunch or other breaks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Thaw and prepare bottles of pumped milk if needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Keep extra breast milk in a freezer for use if they run out during the day?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**SECTION 6: OTHER INFORMATION**

61. During the past 2 weeks, have you had any health conditions, which made it hard or impossible for you to take care of your baby?

Yes.....  No.....

62. On the average, how many cigarettes do you smoke a day now? (Write in 0 if you do not smoke).

\_\_\_\_\_ CIGARETTES PER DAY

63. How many people including yourself smoke inside your home most days? (Include yourself, family members, friends, and anyone else)

0  1  2  3  4 or more

**Infant Feeding Questionnaire: 6 Months  
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64. In the past month, were you or your baby enrolled in the WIC program or did you get WIC food or vouchers for yourself or for your baby? (WIC is a program that gives food to pregnant and nursing women, babies, and young children.) **(PLEASE "X" ALL THAT APPLY)**

- Yes, I was enrolled or got WIC food for myself.....  
Yes, my baby was enrolled or got WIC formula or food .....  
No.....

65. Does your baby have any serious, long-term medical problems?

- No.....      Yes..... → **(PLEASE EXPLAIN BRIEFLY)** \_\_\_\_\_

66. What was the longest time your baby usually slept at night without waking?

- 2 hours or less        
3 to 4 hours        
5 to 6 hours        
7 to 8 hours        
8 hours or more

67. Date you completed this form: MONTH \_\_\_\_\_ DAY \_\_\_\_\_ YEAR \_\_\_\_\_

**THANK YOU. PLEASE RETURN THIS QUESTIONNAIRE AS SOON AS POSSIBLE IN THE POSTAGE PAID ENVELOPE PROVIDED.**

## APPENDIX D

### PROCEDURES

The study design consists of direct measurements and questionnaires.

Home visits will be scheduled at the participant's convenience by phone or email. The participant will be given the option to come to the Human Nutrition Lab if they prefer. If they come to the Human Nutrition Lab a parking pass will be provided.

Consent/Neonatal Home Visit:

1. Researcher arrives and introduces herself to the mother and/or other family members.
2. Researcher goes over the consent process with the mother.
3. If mother requires additional time to consent or refuses to consent then researchers will thank her for her time, schedule another home visit if appropriate, and then leave.
4. If the mother consents, then the researcher will give the mother the neonatal questionnaire.
5. After the mother completes the questionnaire, the researcher will collect it, give the mother the small gift for her participation, thank her for her participation, and then leave.

Home Visits when infant is 2 months old, 4 months old, 6 months old, 9 months old, and 12 months old:

6. Researcher (s) arrive, introduce themselves, and set up equipment. Equipment includes a pan-type pediatric electric scale, recumbent length measuring board, infant skinfold thickness caliper, an adult electronic scale, and measuring tape
7. Researcher will explain to the mother that she may stop or pause measurements at any time.
8. Mother weight measurement procedure:
  - a. Scale will be accurate to the nearest 100g and placed on a hard flat surface
  - b. The scale will be calibrated
  - c. Mother dressed in light clothing will be instructed to stand in the middle of the scale's platform without touching anything and the body distributed on both feet
  - d. The researcher will record the body weight noting the date and time.

- e. A repeat measurement will be taken to ensure accuracy (weights should be within 100g or ¼ lb). If there is a discrepancy between the weights take a third measurement
  - f. If necessary the scale will be recalibrated and measurements repeated.
9. Mothers waist circumference measurement:
- a. Researcher will instruct the mother to stand with heels together and arms at her side.
  - b. Researcher will locate the top of the right iliac crest, the high point of the hip bone on the right side.
  - c. A measuring tape will be placed in a horizontal plane (parallel to the floor) around the abdomen at the level of the iliac crest.
  - d. Researcher will ensure the tape is snug, but not compressing the skin.
  - e. The measurement will be recorded at the end of normal expiration.
  - f. The measurement will be repeated for accuracy.
10. Infant weight measurement procedure:
- a. Researcher will ask the mother to undress the infant and ensure diaper is dry.
  - b. Scale will be accurate within 10g or ½ oz.
  - c. Researcher or mother will place infant in the middle of the pan.
  - d. 3 measurements will be taken and recorded
  - e. If infant is moving excessively weighing will be deferred to a later time during the visit
  - f. If infant is still too active to be measured researcher will ask the mother to stand on the adult scale holding the baby. The baby's weight will be subtracted.
  - g. Mother will be given time to redress infant if desired. Researcher will ask mother to leave infant's socks and shoes off.
11. Infant length measurement procedure:
- a. Infant will be placed on the measuring device. One researcher (or mother if only 1 researcher) will gently hold the infant's head against the backboard, with the crown of the head securely against the headboard.
  - b. Researcher will then ensure that the long axis of the infant's body is aligned with the center line of the backboard, infant's shoulders and buttocks securely touching the backboard, and the shoulders and hips at right angles to the long axis of the body
  - c. The other researcher will gently straighten the legs of the infant against the backboard.
  - d. Then the researcher slides the footboard against the bottom of the feet (without shoes or socks) with toes pointing upward.
  - e. Length will be recorded to the nearest .1 cm or 1/8 in.
  - f. Measurement will be repeated.



- g. If infant is moving or crying excessively measurement will be deferred to later in the visit.
  - h. If infant is not cooperative at the later time a best estimate will be recorded with a note describing conditions.
12. Infant skinfold thickness measurement procedure:
- a. Skinfold measurement is a quick and noninvasive way to estimate body fat. Before beginning researcher will explain the procedure to mothers. Researchers will explain that the infant may experience mild discomfort at the skinfold site, while the measurement is being taken due to the slight pinching required by the procedure. The researcher will reassure the mother that every effort that she will be gentle, measure quickly, and stop if infant cries excessively or the mother requests. If mothers seem unsure about the measurement researchers will show mothers what it feels like, so they can be reassured that their infant will not be in any pain. .
  - b. All skinfold measurements will be taken on the **right** side of the infant's body using the Harpenden caliper.
  - c. Researcher will make a small mark with a washable marker at the skinfold site with permission from the mother.
  - d. The 4 sites that will be measured include: **tricep, bicep, subscapular, and suprailiac.**
  - e. The skinfold will be grasped by the researcher's thumb and index finger of the left hand about 1 cm or ½ in. proximal to the skinfold site and pulled away from the body. The amount of tissue must be enough to form a fold with approximately parallel sides. The thicker the fat layer under the skin the wider the necessary fold.
  - f. Researcher will hold the caliper in the right hand, perpendicular to the long axis of the skinfold and with the caliper's dial facing up and easily readable.
  - g. Caliper tips should be placed on the site and should be 1 cm or ½ in distal to the fingers holding the skinfold, so pressure from the fingers will not affect the measured value.
  - h. The researcher will place the caliper arms on the skinfold one at a time. Being careful not to place the calipers too deeply or too close to the tip of the skinfold.
  - i. Researcher will read the dial 4 seconds after the pressure from the measurer's hand has been released on the level arm of the caliper. Readings will be recorded to the nearest 1mm.
  - j. A minimum of two measurements will be taken at each site. Measurements will be at least 15 seconds apart to allow skinfold site to return to normal. If consecutive measurements vary by more than 1mm, more will be taken until there is consistency.

- k. Measurer will maintain pressure with thumb and index finger throughout each measurement
  - l. Averages of the measurements will be taken and entered into a regression equation for the percent body fat prediction
  - m. If child is crying excessively researchers will pause or stop the procedure. Trying again once the infant has calmed down with the mothers permission.
13. Researcher will ask mother if she has completed and mailed in the most recent questionnaire. If she has not completed the questionnaire the researcher will read the questions the mother and mark answers indicated by the mother.
  14. At the end of the visit the researcher will thank the mother for participating and give the mother and infant the small gift.

#### Postnatal Questionnaires:

Mothers will be asked to complete 10 postnatal questionnaires on infant feeding practices. The neonatal questionnaire will be completed after consent at the first home visit. The 9 remaining questionnaires will be mailed when the infant is approximately 2 months, 3 months, 4 months, 5 months, 6 months, 7 months, 9 months, 10 months, and 12 months old. The questionnaires will be mailed with a pre-paid return envelope.