

CONVERSATIONS WITH PARENTS OF INFANTS: OPINIONS ON BEST WAYS  
TO FEED AND PREVENT OBESITY

A THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE OF MASTERS OF SCIENCE

IN THE GRADUATE SCHOOL OF

TEXAS WOMAN'S UNIVERSITY

DEPARTMENT OF NUTRITION

COLLEGE OF HEALTH SCIENCES

BY

ADYSON MITCHELL, B.S. IN NUTRITION

DENTON, TEXAS

MAY 2019

Copyright © 2019 by Adyson Mitchell

## DEDICATION

*To my parents,  
For all of the sacrifices to make my dreams come true.*

*To Jonathan,  
For being my very best friend.*

## **ABSTRACT**

ADYSON MITCHELL

### **CONVERSATIONS WITH PARENTS OF INFANTS: OPINIONS ON BEST WAYS TO FEED AND PREVENT OBESITY**

MAY 2019

Infancy is the earliest opportunity to promote healthful eating habits and decrease obesity risk, but few early pediatric obesity prevention studies exist that specifically target the views of parents toward feeding their infant. This study used a general qualitative approach to explore parents' perceptions regarding the causes of early pediatric obesity, various ways of feeding infants, and communication preferences with their infant's healthcare provider to guide the development of an early obesity prevention intervention. Focus groups and structured interviews were conducted with fifteen parents of healthy, term infants. The two primary themes identified from the data were "Parental Attitudes about Feeding or Parenting" and "Parental Preferences about Feeding Information." Parents of infants are aware of the benefits of breastfeeding and delaying introduction of solids and sweets. However, they cite individual barriers to adopting healthy practices and want healthcare provider help. Understanding parental opinions surrounding infant feeding can help guide the development of theoretically driven interventions.

## TABLE OF CONTENTS

	Page
Table of Contents	
DEDICATION .....	ii
ABSTRACT .....	iii
TABLE OF CONTENTS .....	iv
LIST OF TABLES .....	vi
Chapter	
I. INTRODUCTION .....	1
Purpose.....	2
Research Questions.....	2
Assumptions.....	2
Definition of Terms.....	3
Study Significance .....	3
Chapter	
II. LITERATURE REVIEW.....	4
Early Obesity and Infant Feeding Practices.....	4
Factors Affecting Pediatric Feeding Habits.....	5
Parental Views of Breastfeeding.....	6
Parent-Healthcare Provider Relationship & Feeding Decisions.....	8
Chapter	
III. RESEARCH METHOD.....	11
Instrument .....	13
Procedures.....	13
Analysis.....	14
Initial Analysis .....	14
Secondary Analysis and Confirmation .....	15
Trustworthiness Statement.....	16
Chapter	
IV. RESULTS .....	17
Parental Attitudes about Feeding or Parenting .....	20
Breastfeeding .....	20
Benefits. ....	20
Attitudes about Introducing Solids .....	22

Feeding Opinions .....	23
Problems Related to Feeding or Parenting.....	25
Parental Preferences About Feeding Information.....	27
Receiving Information about Feeding .....	27
Information Through Text Messaging .....	28
Chapter	
V. DISCUSSION .....	29
Study Significance .....	31
Limitations .....	32
Chapter	
VI. CONCLUSION.....	33
Future Research .....	34
Summary .....	34
REFERENCES .....	36
APPENDIX A.....	49
IRB Approval Letter .....	50
APPENDIX B .....	51
Focus Group & Interview Script.....	52

## LIST OF TABLES

Table	Page
1. Final Interview Questions .....	13
2. Focus Group Participant Characteristics.....	18
3. Nodes, Sub-themes, Themes.....	19

## **CHAPTER I**

### **INTRODUCTION**

The quickly rising rates of pediatric obesity is concerning because obese children are more likely to become obese adults with increased cardiovascular problems compared to their normal weight counterparts.<sup>1-3</sup> About 9.1% of children aged birth to 2 years are overweight, with overweight being defined as weight for recumbent length at or greater than the 95th percentile on the Centers for Disease Control and Prevention (CDC) growth charts.<sup>3</sup> While there was no significant change in pediatric obesity rates from 2003-2004 through 2013-2014, these rates continue to remain high. Thus, continued interventions to combat early overweight and obesity are warranted.

High rates are not only concerning because of later risk for adult chronic disease but also because high body mass index (BMI) in childhood is associated with risk for comorbidities in childhood, including cardiovascular disease, and type 2 diabetes mellitus.<sup>6-16</sup> A developmental pathway theory called the “early-life hypernutrition pathway” suggests that hypernutrition in fetal or early postnatal life may increase the likelihood of pediatric or adulthood obesity.<sup>17</sup> A study of 257 children demonstrated an association between increased BMI as early as two weeks of age and an increased risk of being overweight at ages six, 12, 36, and 60 months.<sup>18</sup>

Despite research revealing that modifiable factors for childhood obesity can be identified antenatal or during infancy, the majority of pediatric obesity prevention

interventions target older children.<sup>18</sup> Infancy and early childhood are important points of intervention because of the potential to decrease rates of later obesity and decrease chances of developing comorbidities.<sup>16</sup> Talking to parents about how they perceive modifiable risk factors is an important step toward designing targeted interventions to address parent perceptions and misconceptions concerning feeding their infant.

### **PURPOSE**

The purpose of this study was to examine parental attitudes towards obesity, feeding, and communication with their infant's healthcare provider in order to create targeted messaging related to feeding and obesity prevention in young children.

### **RESEARCH QUESTIONS**

- What are parents' thoughts about feeding their baby?
- What do parents think are causes of pediatric overweight?
- What information would parents like to receive from their healthcare provider about feeding their infant?
- How would parents like to receive feeding information from their infant's healthcare provider?

### **ASSUMPTIONS**

Prior to conducting the proposed research, certain assumptions were made. The assumptions were as follows:

1. Mothers and fathers have opinions about pediatric obesity, feeding, and communication with their infant's healthcare provider.



2. Parents of infants have some type of philosophy or beliefs that determines how they feed their infant.
3. The relationship between a healthcare provider and a mother or father of an infant can affect how parents feed their infant.

## **DEFINITION OF TERMS**

Below are the definitions of terms utilized by this study:

Hypernutrition. The process of overfeeding or overeating.<sup>20</sup>

Modifiable Risk Factors. Factors that can increase disease risk but are changeable.<sup>21</sup>

Primiparas. A mother who has borne only one offspring.<sup>22</sup>

Perceived Barriers. Factors that the individual feels are obstacles to performing a recommended health behavior.<sup>23</sup>

Data Saturation. The point at which further data collection or analysis is unnecessary because no new information is being discovered.<sup>24</sup>

## **STUDY SIGNIFICANCE**

Pediatric obesity is detrimental, not only in terms of increasing later risk for adult disease but also increasing risk for comorbidities in childhood, such cardiovascular disease, type 2 diabetes mellitus, and possible premature death.<sup>25</sup> It is essential to understand parental attitudes towards obesity, feeding, and communication with their infant's healthcare provider in order to create targeted messaging related to infant feeding and early obesity prevention.

## **CHAPTER II**

### **LITERATURE REVIEW**

#### **EARLY OBESITY & INFANT FEEDING PRACTICES**

Research suggests that early feeding practices, including longer breastfeeding and delayed introduction of solids, may reduce risk of pediatric obesity.<sup>26,27</sup> A review that summarized data from 40 studies identified modifiable factors associated with infant overweight such as breastfeeding duration and exclusivity, introductory age to solids and intake of sugar-sweetened beverages, and parental dietary beliefs and habits.<sup>26</sup> Information gathered in this review found that breastfeeding, especially exclusivity in the first six months of life, was associated with a reduced risk of pediatric obesity.<sup>26</sup> In contrast, introduction of solids before four months of life and early consumption of sweetened beverages are positively associated with increased rate of weight gain during infancy and pediatric adiposity.<sup>26</sup> The review revealed the potential to decrease pediatric obesity risk by targeting obesity as early as birth with interventions focused on modifiable factors such as feeding patterns.<sup>26</sup>

Another review of 35 randomized controlled trials designed to prevent early pediatric obesity found that most trials did not affect child weight, and interventions aimed at improved child diet and parental feeding responsiveness were most effective.<sup>27</sup> This systematic review indicated that breastfeeding of any duration may protect against pediatric overweight and obesity, and prenatal breastfeeding education was effective at

increasing breastfeeding rates.<sup>27</sup> The results of this review further support the potential of early feeding practice interventions to prevent pediatric overweight and obesity.<sup>27</sup>

In another study involving mother-newborn dyads, mothers with the intention to breastfeed were grouped in one of four different intervention groups: “Introduction of Solids,” “Soothe/Sleep,” both interventions, or neither intervention. Mothers in the “Introduction to Solids” group received education from nurses about the appropriate time to introduce solids and how to distinguish between hunger and satiety cues.<sup>28</sup> Mothers in the “Soothe/Sleep” group were educated by nurses on strategies other than feeding to soothe crying babies, such as allowing the babies to self-soothe through falling asleep.<sup>28</sup> Mother-infant dyads who received the most feeding education in both interventions had lower weight-for-age and weight-for-length percentiles.<sup>28</sup> This suggests that early education on feeding is positively associated with behavior change in parents of young children and can promote more favorable outcomes in the health of these children.<sup>28</sup>

## **FACTORS AFFECTING PEDIATRIC EATING HABITS**

To effectively target future pediatric obesity prevention interventions, it is important to understand the mechanisms by which children develop certain dietary habits.<sup>29</sup> The dietary attitudes and beliefs of parents have been shown to influence the dietary habits of their children, such as dieting.<sup>29</sup> Authors examined the main factors that determine a young child’s food behaviors and beliefs. The top three findings were concern about body weight, feelings of guilt, and the need to eat all of the food presented to them.<sup>29</sup> This study also found that parents’ BMI classification, diet quality, geography,

and prevalence of breastfeeding were associated with positive dietary behaviors and beliefs among their children.<sup>29</sup> In addition, parents' food beliefs have a significant impact on the eating behaviors and subsequent risk of obesity of their child.<sup>29</sup> Furthermore, the influence of parents on food-related attitudes and beliefs of their children points to the importance of implementing parent-focused interventions to prevent pediatric obesity.<sup>29</sup>

### **PARENTAL VIEWS OF BREASTFEEDING**

According to the CDC, there is a disconnect between women in the United States who want to breastfeed and those who actually breastfeed postnatally.<sup>30</sup> Many factors, such as physical and emotional support, influence a woman's feeding decisions, so understanding the infant feeding opinions of parents of young children is important in understanding early feeding practice trends.<sup>36,37</sup> A few studies have been conducted to better comprehend the thoughts of pregnant women with intentions to breastfeed.<sup>38,39</sup> In one study, researchers conducted focus groups and asked participants various questions related to feeding opinions.<sup>38</sup> Examples of questions asked included the following: "What are some of the positive things you've heard about breastfeeding?" "What factors were involved in your decision (to breastfeed or formula feed)?" "Are there any factors which you think will make breastfeeding hard?"<sup>38,39</sup> These researchers found breastfeeding education greatly influenced the parents' feeding decisions and fear of breastfeeding in public was a common barrier to breastfeeding despite the overwhelmingly positive opinions of breastfeeding.<sup>38,39</sup> Another study found that women overall believed breastfeeding was positive, noting perceived benefits such as improved immunity and

allergy prevention in their infants, but convenience was the most important factor influencing infant feeding decisions.<sup>39</sup> The results collected from these studies suggest that breastfeeding education should focus on helping mothers overcome perceived breastfeeding barriers rather than emphasizing breastfeeding benefits, as many mothers demonstrated sufficient knowledge in the latter.<sup>38,39</sup>

Other studies have investigated the influence of breastfeeding self-efficacy and support on the early feeding decision of primiparas.<sup>40,41</sup> Studies have shown the higher a mother's level of breastfeeding self-efficacy, the more likely she will breastfeed postnatally and continue breastfeeding.<sup>42-44</sup> Therefore, increasing self-efficacy is an important factor in increasing breastfeeding rates.<sup>42-44</sup> One study measured breastfeeding self-efficacy and attitudes through focus groups prenatally and postpartum.<sup>40</sup> Mothers reported anxiety about their baby's first feedings, and they received conflicting advice from healthcare providers, family, and friends.<sup>40</sup> They also reported validating experiences such as perceived feeding support from providers and friends or family boosted their confidence and self-efficacy to breastfeed.<sup>40</sup>

In a similar study, researchers aimed to compare the feeding attitudes of parents breastfeeding with those of parents formula feeding using the Iowa Infant Feeding Attitude Scale.<sup>41</sup> Results revealed a relationship between higher scores on this scale and breastfeeding.<sup>41</sup> The higher scores correlated with more positive attitudes toward breastfeeding and more knowledge of breastfeeding benefits compared to parents of formula fed infants.<sup>41</sup> This study and another similar study investigating perceived

breastfeeding barriers affecting feeding decisions among mothers both showed a positive relationship between prenatal feeding intention and actual postpartum feeding and a positive relationship between the level of understanding of breastfeeding benefits and breastfeeding mothers.<sup>41,45</sup> These studies revealed that breastfeeding attitudes and perceived barriers of mothers prenatally and postpartum should be the focus of future breastfeeding interventions designed to increase breastfeeding rates.<sup>40,41</sup>

## **PARENT-HEALTHCARE PROVIDER RELATIONSHIP & FEEDING DECISIONS**

Feeding support from healthcare professionals and the manner in which they communicate their support may also influence feeding decisions among mothers of infants.<sup>46-53</sup> Physicians are particularly persuasive because of their position of power and authority.<sup>46-53</sup> An increase in breastfeeding rates and a delay of breastfeeding cessation has been reported among mothers who received face-to-face support from healthcare professionals.<sup>54</sup> In one study, women were recruited from WIC clinics, and their sources of breastfeeding advice and/or education were analyzed.<sup>54</sup> Women described breastfeeding education delivered by WIC staff as beneficial.<sup>54</sup> Although mothers found breastfeeding advice from healthcare providers to be beneficial, other sources of information, from family or friends were of equal importance.<sup>54</sup> In addition, breastfeeding advice was ignored if it did not align with the family's current circumstances, such as returning to work, time constraints, familial influences, and feeding difficulties.<sup>54</sup>

Results of similar studies reported that mothers prioritized advice from their own mothers or close friends more than breastfeeding advice given by their doctors, indicating information from a trusted relationship is most valued.<sup>46-47, 46-58</sup> Some mothers reported that their healthcare providers were not supportive of breastfeeding, often resulting in a decrease in breastfeeding self-efficacy followed by a decrease in breastfeeding overall.<sup>45</sup> Mothers were not receptive to information provided by doctors who appeared rushed or apathetic during the counseling session; however, mothers who received breastfeeding encouragement, information, and advice on overcoming barriers were more likely to breastfeed.<sup>47,48</sup> In a study to determine the relationship between how health professionals communicate about infant feeding and the resulting feeding decisions by first-time mothers, women felt they had different feeding goals than their respective health professionals. This resulted in the mothers' dissatisfaction with the health professional.<sup>49</sup> Themes of compassion, empathy, and breastfeeding encouragement provided by healthcare professionals were associated with positive patient-provider interactions and breastfeeding compliance in mothers of infants.<sup>46,50</sup>

In another study, dietitians provided counseling sessions to parents to increase breastfeeding knowledge, skills, and support with the goal of decreasing pediatric obesity risk.<sup>52</sup> The intervention included one-on-one sessions lasting an average of two hours where parents were counseled to build breastfeeding self-efficacy and confidence in knowing how and what to feed their infant.<sup>52</sup> This intervention resulted in a decreased incidence of parents feeding their infants sweet snacks, indicating the counseling sessions

with the dietitians resulted in positive behavior changes among parents.<sup>52</sup> A similar study found an association between the counseling sessions and feeding behavior changes in the parents and children, indicating personalized, one-on-one education sessions for parents may be an effective and cost-efficient means of pediatric obesity prevention.<sup>52,53</sup>

National statistics demonstrate early obesity is a major threat to the health of United States children, and research indicates early intervention to modify feeding practices of infants is one way to reduce early obesity.<sup>32,59</sup> Despite this knowledge, there remains a deficit of impactful, cost-effective, and efficient programs.<sup>60-63</sup> Most infants from all socioeconomic, racial, and ethnic groups see their infant's care provider several times during the first year of life, but providers are often rushed to do many things during these visits.<sup>60-63</sup> Text messaging holds promise for preventing early obesity by trying to influence feeding practices efficiently.<sup>60-63</sup> Text messaging could be used in a primary care setting to help pediatric care providers communicate quickly, efficiently, and empathetically with parents of infants about feeding.<sup>60-63</sup> However, to design this type of text messaging intervention, it is important to use formative assessment to gather meaningful data that can be used to design appropriate interventions for the priority population.



### **CHAPTER III**

#### **RESEARCH METHOD**

The present study used a general qualitative approach to understand the thoughts and perceptions of parents of infants in an urban, diverse community in Fort Worth, Texas, on various ways of feeding an infant, as well as their views on causes of early pediatric obesity, and their thoughts about receiving feeding information from their infant's healthcare provider.<sup>64</sup> Individual interviews were the primary means by which the data was collected. Participants in the individual interviews or small focus groups were asked various questions related to the research questions and were asked to respond based on their opinions.<sup>64</sup> In order to avoid biasing the groups toward specific responses, a standardized protocol and attentiveness to neutrality were established.<sup>64</sup> A standardized script was read to each participant before questions were asked (See Appendix B). This study was approved by the Institutional Review Board of Texas Woman's University. Participants provided informed consent prior to participating in focus groups or interviews.

Participants were recruited from the University of North Texas Health Science Center (UNTHSC) Pediatric Clinic using criterion sampling.<sup>65</sup> To be included, participants had to be 18 years or older and English-speaking parents of healthy, term infants who established care with a healthcare provider in the first three to 30 days of life. Parents of pre-term infants (born <37 weeks gestation) or infants with genetic conditions or congenital abnormalities, parents less than 18 years old, parents who established care

with a healthcare provider after the first 30 days of life, and parents who did not speak or understand English well were excluded. The health care provider of infants whose parents were eligible to participate provided interested parents an information sheet containing a phone number and email address of the primary investigator (PI) to contact if interested. The plan was to try to schedule interested parents for an infant follow-up at the day/time of a scheduled focus group. Interested parents could also contact the PI for information, and to be advised of the day and time for the planned focus groups, which were held in a conference room at the UNTHSC Pediatric Clinic. Recruitment methods also included verbal invitations to parents of infants in the waiting room of UNTHSC Pediatric Clinic. Parents who agreed to participate upon verbal invitation in the waiting room were told where to meet the PI after their infant's doctor appointment. When possible, more than one parent was gathered to form a small focus group. When not possible, one or two parents were individually interviewed using the focus group questions.

Participants were identified only by number. A standardized introduction and explanation of the study was initiated by the PI in each interview. The student investigator acted as the co-moderator and took notes during the focus groups. Participants received a \$25 gift card to Walmart as compensation for their time, effort, and participation in this study. Each interview was recorded and subsequently transcribed verbatim on a password-protected computer.

## **INSTRUMENT**

The semi-structured interviews used open-ended questions.<sup>65</sup> The PI wrote the qualitative interview questions, which they were edited and reviewed by the research team, including the student investigator. Final interview questions are presented in Table 1. The research questions for this study informed the interview questions, and the structure of the questions aimed to reduce yes/no responses and encourage discussion without compromising research intent.<sup>65,66</sup> The questions were written to prompt exploration of various issues, and follow-up questions by the PI were spontaneous based on participants' answers<sup>65</sup> The in-depth interview approach was intended to provide a more detailed, comprehensive representation of this populations' opinions and yield less biased data.<sup>65</sup>

---

**Table 1. Final Interview Questions**

- 
1. What are your thoughts about breastfeeding your baby?

---

  2. What are your thoughts about using formula to feed your baby?

---

  3. Tell me your thoughts on when the best time is to begin feeding your baby something other than breastmilk or formula.

---

  4. What types of foods do you think are the best to begin feeding your baby?

---

  5. What do you think about offering your baby sweetened foods or drinks?

---

  6. What do you think might cause some babies or children to become overweight?

---

  7. What information would you like to receive from your healthcare provider about feeding your baby?

---

  8. What are your thoughts about receiving information about feeding by text messaging?

---

## **PROCEDURES**

The PI conducted the interviews and discussed with the participants their opinions about feeding their baby using a semi-structured questioning route. The interviews took

about one hour or less, depending on the number of participants in each group, how much each participant shared, and conversations with the PI. The PI asked each participant to share his/her thoughts after each question was read, and the whole interview was recorded on two different digital voice recorders. The PI asked the questions, listened to the answers, and summarized what was heard from the participants for clarity following each question. To protect confidentiality, names were not used during recorded interviews or focus groups, and participants were reminded that everything said should be kept private. The student investigator acted as the co-moderator and took notes during the focus groups. Participants received a \$25 gift card to Walmart as compensation for their time, effort, and participation in the study.

## **ANALYSIS**

Interviews were analyzed for themes and patterns of responses. Interview discussions were transcribed as they were collected. NVivo 12 Pro for Windows (QSR International, Melbourne, Australia) is a computer-assisted software that stores and analyzes non-numeric data. NVivo was used to identify nodes. A node is a term used in NVivo to describe the basic unit of a “code” that represents concepts, individuals, demographic attributes, or a range of other informational features.<sup>67</sup>

## **INITIAL ANALYSIS**

Following the transcription of about half of the interview conversations, two coders analyzed the data in NVivo using a theoretical thematic analysis process, in which each segment of data was coded that was relevant to one of the research questions.<sup>68</sup>

Open coding was used, in which codes were developed and modified during the coding process as opposed to using present codes.<sup>68</sup> The first type of coding that was used was initial coding.<sup>68</sup> The first coder analyzed half of the interview transcripts. A second coder then reviewed the codes developed by the first coder. Consensus was used to modify and/or merge codes as needed. Then the first coder coded the remaining transcripts, and the second coder reviewed them again. The second coder then independently coded about half of the transcripts using the same code sets. After discussion to develop consensus, a few codes were added. The first coder then re-evaluated the transcripts with these codes in mind. In addition, the first coder expanded coded sections to include more context for quotes. A coding comparison to find an average Cohen's Kappa for each individual code was conducted to measure the level of agreement between the two coders. An overall average Kappa for all of the codes was calculated.

## **SECONDARY ANALYSIS AND CONFIRMATION**

After coding was complete, data were sorted into categories in order to identify themes.<sup>69,70</sup> After the categories were sorted into themes, a comparative pattern analysis was completed to confirm themes.<sup>69,70</sup> No new themes were identified in the analysis of the final transcripts. Therefore, it was decided that the recruitment of additional participants was unnecessary as data saturation was reached.<sup>71</sup> During data collection, the research team had also debriefed periodically about the focus groups and/or interviews to see what themes or codes were developing based on listening and notes, and the team had determined no new themes were being identified.

## **TRUSTWORTHINESS STATEMENT**

Four categories help define the trustworthiness of this qualitative study: conformability, transferability, dependability, and credibility.<sup>69</sup> Conformability was established through fully assessing the research team's assumptions, and transferability was shown in the sample of participants that met predetermined inclusion factors. Dependability and credibility were shown in the use of field notes during the focus groups/interviews and the triangulation method used to check the validity of the conclusions drawn.

## **CHAPTER IV**

### **RESULTS**

Fifteen parents (10 mothers, 5 fathers) participated (mean age:  $26 \pm 7.33$ ) (Table 2). There were five partner sets among the participants. Both focus groups and interviews were conducted with all fifteen parents. No parents who received information flyers contacted the PI, so all participants were recruited via verbal invitation. There were five overall focus groups, four that included related pairs and one group that included one related pair and one unrelated mother. In addition, four individual interviews with mothers were conducted. Qualitative analysis revealed six sub-themes from the codes identified. They were as follows: breastfeeding, attitudes about introducing solids, feeding opinions, problems related to feeding or parenting, information through text messaging, and receiving information. From these sub-themes, two primary themes were identified: parental attitudes about feeding or parenting and parental preferences about feeding information. (Table 3).

**Table 2.** Focus Group Participant Characteristics

<b>Participant ID</b>	<b>Age</b>	<b>Sex</b>	<b>Primary Language</b>	<b>Other Languages</b>	<b>Height (inches)</b>	<b>Weight (pounds)</b>	<b>BMI (kg/m<sup>2</sup>)</b>
101	37	Mother	English	None	66	205	33.1
102	45	Father	English	None	73	390	51.4
103	28	Father	Spanish	English	64	194	33.3
104	22	Mother	Spanish	English	62	200	36.6
105	24	Mother	English	None	62	180	32.9
106	24	Mother	English	Hawaiian	60	110	21.5
107	34	Father	English	Hawaiian	73	209	27.6
108	24	Father	English	None	70	190	27.3
109	27	Mother	English	Not Specified	65	175	20.6
110	18	Mother	English	None	59	Not Specified	NA
111	22	Mother	English	None	68	160	24.3
112	20	Mother	English	None	68	Not Specified	NA
113	19	Mother	English	None	63	165	29.2
114	24	Father	English	Spanish	66	185	29.9
115	24	Mother	English	Spanish	66	172	27.8



**Table 3.** Nodes, Sub-themes, Themes

<b>Nodes</b>	<b>Sub-themes</b>	<b>Themes</b>
<ul style="list-style-type: none"> <li>• Attitudes About Breastfeeding</li> <li>• Breastfeeding Barriers</li> <li>• Breastfeeding Benefits</li> </ul>	Breastfeeding	Parental Attitudes about Feeding or Parenting
<ul style="list-style-type: none"> <li>• Best Age to Introduce Solids</li> <li>• Best Foods to Introduce Solids</li> <li>• How Solids Should be Introduced</li> <li>• Introduction of Solids by Family Members</li> <li>• Reasons to Start Introducing Solids</li> </ul>	Attitudes About Introducing Solids	
<ul style="list-style-type: none"> <li>• Attitudes about Feeding with Formula</li> <li>• Feeding Style &amp; Responsive Feeding Attitudes</li> <li>• Attitudes about Introducing SSB or Foods</li> <li>• Signs a Baby is Hungry</li> </ul>	Feeding Opinions	
<ul style="list-style-type: none"> <li>• Causes of Picky Eating</li> <li>• Causes of Early Overweight or Obesity</li> </ul>	Problems Related to Feeding or Parenting	
<ul style="list-style-type: none"> <li>• Information Interested in Receiving via Text</li> <li>• Attitudes About Receiving Feeding Information by Text Message</li> <li>• Preferred Time and Frequency to Receive Text Messages</li> </ul>	Information Through Text Messaging	
<ul style="list-style-type: none"> <li>• Information Wanted From Healthcare Provider</li> <li>• Preferred Learning Style</li> <li>• Sources of Information</li> </ul>	Receiving Information	

## **PARENTAL ATTITUDES ABOUT FEEDING OR PARENTING**

### **Breastfeeding**

**Benefits.** All parents viewed breastfeeding positively. The average Cohen's Kappa for this data was 0.86. Several parents identified specific benefits, as expressed in the quotations below:

#### *Nutrient content*

“I think breastfeeding is really good because from what I've read the baby gets a lot of nutrients and vitamins and like the colostrum and everything necessary for babies especially in the first couple of weeks.”

#### *Maternal hormones*

“I heard it helps with the hormones, or it helps keep the hormones in check for mom. And then shrinks your uterus faster and helps you burn calories and stuff so all those are good things.”

#### *Immunity*

“It helps with the baby's immune system.”

#### *Natural process*

“I think it's a good thing, I think it's natural, I think it's supposed to happen.”

#### *Proper Development*

“I think it's necessary for proper development because there are some things in breastmilk that they just cannot put in formula.”

**Barriers.** While the overall view of breastfeeding was positive, parents noted several barriers, such as confusing messages from health-care providers, breastfeeding in public, pain while breastfeeding, latching issues, and scheduling, time, and energy

constraints. The average Cohen's Kappa for this data was 0.89. These barriers prevented parents from either the initiation or continuation of breastfeeding:

*Confusing messages from health-care providers*

“I have high blood pressure and I take medicine for my blood pressure so I was kinda hesitant to continue to breastfeed even though my doctor said its ok. Well when I had my first doctor when I had my first daughter they told me to stop breastfeeding because of the medicine so it was like what has changed in six years for it to be ok?”

*Breastfeeding in public* (feeling uncomfortable breastfeeding in public places or away from the home)

“When we're out I do give it to her because I'm not really comfortable yet with breastfeeding in public like with other people around.”

*Pain while breastfeeding* (sore nipples or difficult to find a comfortable position to feed)

“They're really sore. And so I have to get really comfortable and like you know use a pillow and like or use a lot of pillows.”

*Latching issues*

“She doesn't want to latch on.”

“It's hard. She doesn't latch on, she gets more fussy.”

*Scheduling, time, and energy constraints*

“I think you should breastfeed, I'm not because it takes a lot of time and energy and my milk didn't come in and I would have to pump like every two hours and I'm trying to finish the school semester right now so I kinda need the extra time and energy.”

“It was just time consuming like pumping and like how long to keep on the breast for them to get full enough. So, you got to be patient and I really wasn't patient. I didn't have the patience to do it.”

## **Attitudes about Introducing Solids**

Participants were asked questions on opinions about the best age to introduce solids, the best foods to first introduce, the reasons behind introducing solids, and the introduction of solids by family members. The average Cohen's Kappa for the responses about introducing solids was 0.66.

**Best age and best foods to first introduce.** Most parents felt the best age to introduce solids was at six months of age. Participants seemed well educated by their health-care provider on the correct age to introduce solids, but not on what should be introduced first. Most felt fruits and vegetables were ideal first foods. The average Cohen's Kappa was 0.67.

Opinions of parents are expressed below:

### *Best age*

“The doctor just told us wait until she's four months.”

“I think it's six months is what they say.”

“I thought it was when they can hold their head up you start administering newer foods.”

*Best foods to first introduce* (foods were defined as anything they fed their baby other than breastmilk or formula)

“The cereal for a while until she's able to start eating the baby food.”

“I would say anything with good nutrients like fruits and vegetables and stuff and nutrients he needs.”

“A type of Gerber that she likes, maybe try all of them and from there I can see what she likes.”

**Reasons to start introducing solids.** Parents expressed wanting to introduce solids because their infant didn't seem to be getting full by the bottle alone or to keep the infant fuller longer. The average Cohen's Kappa for the responses was 0.78.

"I was thinking back to when my daughter was her age and when her mom and my mom were giving her that cereal, it did seem like it was making her full, you know, she wasn't crying for the bottle, I mean she seemed like she was satisfied."

**Introduction of solids by family members.** Many participants also shared frustration around the introduction of solids by their family members. They expressed that family members were more likely to feed their infant something they did not want them to have. The average Cohen's Kappa for the responses was 0.66.

"They were sneaking it."

"I didn't like it! I was very angry."

"They're old fashion and say, 'Well we did it back then and you are alive and you didn't die.' And I'm like, yea we're here but were overweight."

"Yea, I don't really mind. I guess cause it's our family."

### **Feeding Opinions**

Participants shared opinions about feeding their infant, including attitudes toward formula, attitudes about feeding style and responsive feeding, and attitudes about introducing sugar-sweetened beverages or foods. The average Cohen's Kappa among the data concerning feeding opinions was 0.85.

**Formula.** Overall, parents preferred breastfeeding to formula feeding, but they did not imply that feeding with formula was bad for their baby. Parents of infants mostly agreed that formula is necessary in situations such as limited time, inconvenience, and/or

problems with latching. The biggest reason parents chose to formula feed instead of breastfeed was due to the convenience of formula feeding and the barriers of breastfeeding. The average Cohen's Kappa was 0.70.

*Formula is sometimes necessary* (due to medical reasons, convenience, lack of milk production)

“I don't want to put her at risk of possibly putting some type of medicine in her body because of my high blood pressure and the medicines I have to take. So, it's kinda common sense...if you can't breastfeed your kids so you going to have to take the formula.”

“I personally like it because...it's just real quick and easy to pour and shake and put it in her mouth and to me that's easier.”

“I'd still prefer to breastfeed if I could but it feels convenient.”

“I don't produce milk so I had to use the formula.”

“When it comes to single parent dad, formula is essential.”

“That's what the doctor will make you do if they think your baby is underweight.”

*Breastfeeding superior to formula feeding*

“I think formula is ok because I did it with my first baby. I'm going to try to breastfeed him but formula is ok in my book, I don't think nothing's wrong with it.”

**Feeding style and responsive feeding.** Parents noted the differences in responsive feeding when breastfeeding versus formula feeding. Parents expressed that since breastfeeding is “natural”, it is easier to know when the infant has had enough than when feeding with formula. Parents expressed the difficulty in knowing whether they were feeding their infant enough formula. The average Cohen's Kappa for the responses was 1.

“I don't really know how you would tell if the infant is full by formula feeding them. I tell when he's full when he just stops eating.”

“With the breast, the baby will tell you when to stop. But with the bottle...he'd drink up until he's tired.”

“I've heard that your body naturally knows how much to feed the baby. Sometimes I'm worried I'm overfeeding him or sometimes he's not hungry, he just needs to burp.”

When the baby cries, “he wants three things: he wants to be held, he wants to be fed or he wants his pacifier so it's like that's it so the whole trick is figuring out which it is.”

### **Problems Related to Feeding or Parenting**

Participants related picky eating and early pediatric overweight or obesity to problems with feeding or parenting. The average Cohen's Kappa amongst the data was 0.80.

**Picky eating.** A majority of participants thought the parents were mostly responsible for picky eating behaviors among their children. Lack of exposure to new or healthy foods was a common response as to why children grow up to be picky or unhealthy eaters. The average Cohen's Kappa amongst these responses was 0.81.

“My mom didn't feed me right when I was growing up and that's why I'm so picky now, I didn't like vegetables and stuff growing up because my mom didn't feed me that stuff when I was little.”

“Not showing them new foods, not trying to get them to try new foods and stuff. I know with my eight year old I made that mistake, I fed her like fast food when she was little and now she's like really picky.”

**Early pediatric overweight or obesity.** Parents noted several reasons for early pediatric overweight or obesity including introducing solids too early, foods given by parents or grandparents, and lack of healthy foods and exercise due to time, energy,

and/or budget constraints. Parents also noted kids having to finish their plate or eat all of their food, overfeeding kids, or genetic make-up can also lead to early overweight or obesity. The average Cohen's Kappa amongst the data was 0.78.

*Introducing solids too early*

“From what I've read is when you start early with table foods then that leads to obesity.”

*Foods given by family members*

“Their moms and grandparents giving them everything they want.”

*Lack of healthy foods and exercise*

“Not a good balance of vegetables and fruit and more starches and lack of exercise.”

“Lack of having fruits and vegetables, healthy foods, if a parent is or doesn't have money to get to a grocery store, a lot of the cheaper foods that are fast foods or unhealthy foods.”

“Parents don't have time when they work a lot...they don't have time to spend with the kids so they can not go out to run.”

“Sometimes the parents like tired or something they say, ‘hey here's the tablet here's my phone. Let me rest.’”

*Being forced to feed or overfeeding*

“My mom gives us a big plate and I have to finish it. I couldn't stand up before. I said, ‘no, I don't want to anymore.’ And she's like, ‘no you have to finish it.’”

“I guess eating too much. Too much formula.”

*Genes:*

“Could be genetic.”



## **PARENTAL PREFERENCES ABOUT FEEDING INFORMATION**

### **Receiving Information about Feeding**

Parents have opinions when it comes to receiving feeding information from their health-care provider. Parents shared what information they wish to receive and the manner in which they preferred to receive information. The average Cohen's Kappa for these responses was 0.68.

**Information wanted.** Most of the participants expressed a need or desire for more information from their health-care provider concerning feeding. They wanted more information on topics such as what to feed when, how to start solids, and how much to feed. The average Cohen's Kappa amongst the data was 0.46.

“Guidelines on when to start solids and what to start with.”

“More detailed information of...what is good for them.”

“Like an entire meal and just say oh she has to eat broccoli and stuff. Ok, broccoli with what?”

“I would like to know when to feed more.”

“We really want to know more on breastfeeding and the effects that it has.”

**Preferred way to receive information.** Based on different learning styles, parents preferred to receive information about feeding their infant in different ways. The average Cohen's Kappa was 0.96.

“I like the more visual approach, I like to read and see the breakdown and the research and the study and the facts.”

“I want to read it and I want to believe it for myself. I'm not saying I don't trust the doctors, but I want be able to read for myself, so I can have a clearer understanding.”

## **Information Through Text Messaging**

Parents expressed opinions about receiving feeding information via text messaging, including type of information and preferred time and frequency to receive texts. The average Cohen's Kappa amongst the responses about text messaging was 0.8476.

**Information via text.** Parents expressed positive attitudes toward receiving feeding information via text. Parents preferred to receive information about topics such as introducing solids, increasing feeding, and breastfeeding versus formula feeding. The average Cohen's Kappa amongst the data was 0.67.

“When you can start feeding them certain things like solids or purees and stuff like that.”

“How often am I supposed to increase her feeding?”

“The patience, the feeding, sleeping habits like get your rest when the baby is sleeping. Like diapers because some parents don't know how often they should use the bathroom.”

“The updated research, the updated information on formula and breastfeeding.”

**Time and frequency of text messages.** Most parents did not have a preference of time or frequency of texts. The average Cohen's Kappa amongst the data was 1.

“Not a certain time, just when there's new information that needs to be given out.”

“Not days of the week, but times of the day, it would probably be more like night. Because that's when I'm awake.”

## CHAPTER V

### DISCUSSION

Qualitative analysis revealed parental attitudes about different feeding styles greatly influence their feeding practices. The current study's findings that parental feeding opinions have a strong influence on the way infants are fed is consistent with a similar study.<sup>29</sup> Additionally, as discussed in previous studies, breastfeeding education and opinions greatly influence a parents' decision on whether to feed their infants breastmilk or formula.<sup>38-39</sup> The perceived inconvenience of breastfeeding was also reported in this study and others to be the most important factor influencing their feeding decision.<sup>38-39</sup>

A gap was discovered between the feeding information given by healthcare providers and the information actually received by parents. Based on responses from the focus groups and interviews in this study, most parents needed more information, which is likely due to communication barriers between the parent and the healthcare provider. Studies show the successful relay of information from health-care provider to parents is largely dependent on the manner in which the information is given.<sup>46-53</sup> Parents are less likely to adhere to the advice of a health-care professional if the advice is not realistic for his/her current circumstances, such as returning to work, time constraints, or feeding difficulties.<sup>54</sup> Because the majority of the participants in the present study expressed a desire for more information from providers, a problem with how the information is being

delivered is probable. Limitations, such as the provider not having enough time to give all of the information needed during a visit or the parent having too much going on during a visit to remember the information, may contribute to this communication barrier.

Additionally, many participants expressed a strong familial influence on both their feeding opinions and on the way their infant was being fed. Results of a similar study showed mothers were more likely to adhere to the advice of their own mothers or close friends above the counsel of health-care providers.<sup>46-58</sup> Similar studies and the current study suggest an intervention targeting the families of parents of infants may be more effective in preventing pediatric obesity than those targeting health-care providers.<sup>46-58</sup> Positive encouragement and working with parents according to their goals instead of the provider's have proven to be more successful means of communication.<sup>49</sup>

Most of the participants believed improper nutrition and physical activity are the main causes of pediatric overweight or obesity. Studies have shown one-on-one sessions are effective between parents and health-care providers to build self-efficacy as it relates to early-life nutrition.<sup>52</sup> Intimate counseling sessions with parents may help improve some of the negative behaviors reported by parents as the potential cause of early obesity, including over-consumption of sweet snacks or lack of physical activity.<sup>52,53</sup> Results of this study indicate a clear need for parents of infants to receive more information and help regarding infant feeding.

Regardless of health-care provider verbal communication with the parents and the information needed about infant feeding during their visit, there is still a gap based on the

responses from participants. According to multiple studies, most infants from all socioeconomic groups, racial, and ethnic groups see their care provider several times during the first year of life, suggesting the gap in information is not due to the amount of time spent with a health-care provider.<sup>60-63</sup> Studies show that mechanisms of communication, such as text messaging, to a population of busy parents of infants has yet to be properly utilized.<sup>60-63</sup> This study and other research indicated potential in the use of text messaging as a cost-effective and quick means of communication of nutrition or health information with this specific population.<sup>60-63</sup>

The implications of the current study suggest a clear need for an intervention targeting infancy and childhood, as many of the current pediatric obesity prevention interventions target older children.<sup>19</sup> The importance of educating parents on how to properly nourish their infant has been shown to be vital in decreasing the risk of pediatric and later obesity; however, the participants of the current study revealed a potential issue with the manner in which the education is delivered and received.<sup>19</sup> There is a need for a pediatric obesity prevention intervention that not only targets infancy and childhood, but also communicates to parents in a concise and convenient way, such as text messaging.

## **STUDY SIGNIFICANCE**

Despite evidence showing that feeding practices are associated with pediatric obesity prevention, early obesity rates remain high.<sup>30,31</sup> The high rates of obesity in children age two to five, the associated co-morbidities of early obesity, and the influence of early feeding practices on the overall risk of obesity are important reasons why early

intervention is necessary.<sup>25,28-30,31-35</sup> Thus, it is important to better understand what parents think about methods of feeding, what information they would like to receive from their infants' healthcare provider, and how they would like to receive it in order to design more effective early obesity prevention strategies.

## **LIMITATIONS**

A major limitation of this study is the composition of the participants, most of which belonged to minority ethnic and racial groups, with a high percentage Hispanic or African American. This makes the generalizability of the results to a larger population difficult. However, since this study was designed to understand the beliefs of a specific, low-income population in order to develop an appropriate intervention, the diversity was a strength in this context.

Another potential limitation of the study is that some parents were interviewed with their spouse in the room. Focus groups or interviews may not have captured all parents' opinions or have been accurately representative of their opinions because of this dynamic. Some may not have felt comfortable sharing their true opinions or they may have not held strong opinions about the research questions, potentially skewing the results of the interviews. Additionally, some participants spent a lot of time waiting to be seen by the doctor, so they may not have expanded on their opinions as much as if they had not been at the clinic for a long time the day of their visit.

## CHAPTER VI

### CONCLUSION

Rates of pediatric obesity are quickly rising, with data from the CDC from 2013-2014 revealing 9.1% of children age birth to 2 years of age are overweight.<sup>73</sup> These continued high rates, along with the consequences of pediatric obesity in later life, reveal the need for new, innovative pediatric obesity interventions.<sup>74-84</sup> Infancy is a significant point of intervention and should be the focus of future interventions. Qualitative data from this study revealed a gap in information received by parents about feeding their infants, which is likely due to communication barriers between the parent and the healthcare provider.

Understanding the feeding opinions of parents and communication barriers can help inform the development and implementation of effective pediatric obesity prevention interventions. Communication barriers may have root in either the patient or the provider. The provider may not be aware that s/he is using language outside of the patients' health literacy, which may contribute to the fact that parents feel they need more information from providers. Additionally, parents may be too preoccupied during visits to retain the information from the provider, as they are often busy taking care of their infant while trying to also listen to the provider. Parents expressed a need for more information about feeding their infant, so either of these mechanisms or potentially a mix of both could be to blame for this desire for more information.

## **FUTURE RESEARCH**

An intervention that integrates more broadly understood modes of communication, such as periodic informational texts to parents, may be useful in filling these gaps. Future research should assess both the degree to which communication barriers exist and the mechanisms by which these barriers present among lower-income parents of infants. Future studies would benefit from more effective modes of recruitment, as this study did not find success with passing out flyers with information. Verbal, face-to-face invitations to participate in the study proved to be more effective than invitations given via flyer.

Additional research studying the parental opinions and preferences of infant feeding are necessary to more adequately form an effective pediatric obesity prevention intervention. For example, research exploring the degree to which breastfeeding barriers influence feeding decisions or the degree to which a parents' feeding decisions are influenced by family members would be useful. Exploring how or to what degree familial opinions effect feeding decisions among different cultures would be useful in the development of successful interventions.

## **SUMMARY**

Parental attitudes about different feeding styles greatly influence the way they decide to feed and what they decide to feed their infant. In turn, parents' feeding styles greatly influence their infants' risk of pediatric and later obesity; therefore, understanding parents' opinions is vital to the development of theoretically driven interventions. Since



parental opinions on feeding infants can differ according to demographic factors among a population, it is essential to understand what parents' opinions are before promoting change. Text messaging may be an effective means of communicating feeding information to parents of infants because of their fast-paced, busy lifestyle. Text messaging is also a widely understood means of communication and easily translates to a broad spectrum of education levels. Future pediatric obesity prevention interventions should utilize parental opinions to formulate and deliver correct, essential feeding information to parents of infants in a clear and relevant manner that translates into practice.

## REFERENCES

### Chapter I

1. Akhtar-Danesh N, Dehghan M, Morrison KM, Fonseka S. Parents' perceptions and attitudes on childhood obesity: A Q-methodology study. *J Am Acad Nurse Pract.* 2011;23(2):67-75. doi: 10.1111/j.1745-7599.2010.00584.x.
2. Davis AM, James RL, Curtis MR, Felts SM, Daley CM. Pediatric obesity attitudes, services, and information among rural parents: A qualitative study. *Obesity.* 2008;16(9):2133-2140. doi: 10.1038/oby.2008.312.
3. Whitaker RC, Wright JA, Pepe MS, Seidel KD, Dietz WH. Predicting obesity in young adulthood from childhood and parental obesity. *N Engl J Med.* 1997;337(13):869-873. doi: 10.1056/NEJM199709253371301.
4. Ogden CL, Carroll MD, Kit BK, Flegal KM. Prevalence of childhood and adult obesity in the united states, 2011-2012. *JAMA.* 2014;311(8):806-814. <http://dx.doi.org/10.1001/jama.2014.732>. doi: 10.1001/jama.2014.732.
5. Ogden CL, Carroll MD, Fryar CD, Flegal KM. Prevalence of obesity among adults and youth: United states, 2011-2014. *NCHS data brief.* 2015(219):1. <https://www.ncbi.nlm.nih.gov/pubmed/26633046>.

6. Baker JL, Olsen LW, Sørensen T, I.A. Childhood body-mass index and the risk of coronary heart disease in adulthood. *N Engl J Med.* 2007;357(23):2329-2337. doi: 10.1056/NEJMoa072515.
7. Stevens J, Cai J, Pamuk ER, Williamson DF, Thun MJ, Wood JL. The effect of age on the association between body-mass index and mortality. *N Engl J Med.* 1998;338(1):1-7. doi: 10.1056/NEJM199801013380101.
8. Franks PW, Hanson RL, Knowler WC, Sievers ML, Bennett PH, Looker HC. Childhood obesity, other cardiovascular risk factors, and premature death. *N Engl J Med.* 2010;362(6):485-493. doi: 10.1056/NEJMoa0904130.
9. Juonala M, Magnussen CG, Berenson GS, et al. Childhood adiposity, adult adiposity, and cardiovascular risk factors. *N Engl J Med.* 2011;365(20):1876-1885. doi: 10.1056/NEJMoa1010112.
10. Lloyd LJ, Langle-Evans S, McMullen S. Childhood obesity and adult cardiovascular disease risk: A systematic review. *Int J Obes.* 2010;34(1):18-28. doi: 10.1038/ijo.2009.61.
11. Ma J, Flanders WD, Ward EM, Jemal A. Body mass index in young adulthood and premature death: Analyses of the US national health interview survey linked mortality files. *Am J Epidemiol.* 2011;174(8):934-944. doi: 10.1093/aje/kwr169.

12. Morrison JA, Friedman LA, Wang P, Glueck CJ. Metabolic syndrome in childhood predicts adult metabolic syndrome and type 2 diabetes mellitus 25 to 30 years later. *J Pediatr*. 2008;152(2):201-206. doi: 10.1016/j.jpeds.2007.09.010.
13. Must A, Jacques PF, Dallal GE, Bajema CJ, Dietz WH. Long-term morbidity and mortality of overweight adolescents. *N Engl J Med*. 1992;327(19):1350-1355. doi: 10.1056/NEJM199211053271904.
14. Owen CG, Whincup PH, Orfei L, et al. Is body mass index before middle age related to coronary heart disease risk in later life? evidence from observational studies. *Int J Obes*. 2009;33(8):866-877. doi: 10.1038/ijo.2009.102.
15. Park MH, Falconer C, Viner RM, Kinra S. The impact of childhood obesity on morbidity and mortality in adulthood: A systematic review. *Reviews*. 2012;13(11):985-1000. doi: 10.1111/j.1467-789X.2012.01015.x.
16. Tirosh A, Shai I, Afek A, et al. Adolescent BMI trajectory and risk of diabetes versus coronary disease. *N Engl J Med*. 2011;364(14):1315-1325. doi: 10.1056/NEJMoa1006992.
17. Gluckman PD, Hanson MA. Developmental and epigenetic pathways to obesity: an evolutionary-developmental perspective. *Int J Obes (Lond)*. 2008;7:S62-71.

18. Winter JD, Langenberg P, Krugman SD. Newborn adiposity by body mass index predicts childhood overweight. *Clin Pediatr*. 2010;49(9):866-870. doi: 10.1177/0009922810369698.
19. Redsell SA, et al. Systematic review of randomized controlled trials of interventions that aim to reduce the risk, either directly or indirectly, of overweight and obesity in infancy and early childhood. *Matern Child Nutr*. 2016;12(1):24-38.
20. Superalimentation; Merriam Webster Web site. <https://www.merriam-webster.com/medical/superalimentation>. Accessed December 18, 2018.
21. Understanding your risk for heart disease. UCSF Health Web site. [https://www.ucsfhealth.org/education/understanding\\_your\\_risk\\_for\\_heart\\_disease/](https://www.ucsfhealth.org/education/understanding_your_risk_for_heart_disease/). Accessed December 18, 2018.
22. Primipara. Merriam Webster Web site. <https://www.merriam-webster.com/dictionary/primipara>. Accessed April 5, 2019.
23. The health belief model. Behavioral Change Models Web site. <http://sphweb.bumc.bu.edu/otlt/MPH-Modules/SB/BehavioralChangeTheories/BehavioralChangeTheories2.html>. Accessed December 18, 2018.
24. Saunders B, et al. Saturation in qualitative research: exploring its conceptualization and operationalization. *Qual Quant*. 2018; 52(4): 1893-1907.

## Chapter II

25. Kelly AS, et al. Severe obesity in children and adolescents: identification, associated health risks, and treatment approaches: a scientific statement from the American Heart Association. *Circulation*. 2013;128(15):1689-712.
26. Dattilo AM, et al. Need for early interventions in the prevention of pediatric overweight: a review and upcoming directions. *J Obes*. 2012;2012:123023.
27. Redsell SA, et al. Systematic review of randomized controlled trials of interventions that aim to reduce the risk, either directly or indirectly, of overweight and obesity in infancy and early childhood. *Matern Child Nutr*. 2016;12(1):24-38.
28. Paul IM, Savage JS, Anzman SL, et al. Preventing obesity during infancy: A pilot study. *Obesity*. 2011;19(2):353-361. doi: 10.1038/oby.2010.182.
29. Lazarou C, Kalavana T, Matalas A. The influence of parents' dietary beliefs and behaviours on children's dietary beliefs and behaviours. the CYKIDS study. *Appetite*. 2008;51(3):690-696. doi: 10.1016/j.appet.2008.06.006.
30. Grummer-Strawn L, Shealy KR, Perrine CG, et al. Maternity care practices that support breastfeeding: CDC efforts to encourage quality improvement. *J Womens Health*. 2013;22(2):107-112. doi: 10.1089/jwh.2012.4158.

31. Ogden CL, Carroll MD, Kit BK, Flegal KM. Prevalence of childhood and adult obesity in the united states, 2011-2012. *JAMA*. 2014;311(8):806-814. <http://dx.doi.org/10.1001/jama.2014.732>. doi: 10.1001/jama.2014.732.
32. Ogden CL, Carroll MD, Fryar CD, Flegal KM. Prevalence of obesity among adults and youth: United states, 2011-2014. *NCHS data brief*. 2015(219):1. <https://www.ncbi.nlm.nih.gov/pubmed/26633046>.
33. Akhtar-Danesh N, Dehghan M, Morrison KM, Fonseka S. Parents' perceptions and attitudes on childhood obesity: A Q-methodology study. *J Am Acad Nurse Pract*. 2011;23(2):67-75. doi: 10.1111/j.1745-7599.2010.00584.x.
34. Davis AM, James RL, Curtis MR, Felts SM, Daley CM. Pediatric obesity attitudes, services, and information among rural parents: A qualitative study. *Obesity*. 2008;16(9):2133-2140. doi: 10.1038/oby.2008.312.
35. Gluckman PD, Hanson MA. Developmental and epigenetic pathways to obesity: an evolutionary-developmental perspective. *Int J Obes (Lond)*. 2008;7:S62-71.
36. Hunter T, Cattelona G. Breastfeeding initiation and duration in first-time mothers: exploring the impact of father involvement in early post-partum period. *Health Promot Perspect*. 2014;4(2):132-6.
37. Kronborg H, Maimburg RD, Væth M. Antenatal training to improve breast feeding: a randomized trial. *Midwifery*. 2012;28:784-90.

38. Avery AB, Magnus JH. Expectant fathers' and mothers' perceptions of breastfeeding and formula feeding: a focus group study in three US cities. *J Hum Lact.* 2011;27(2):147-54.
39. Libbus K, Bush TA, Hockman NM. Breastfeeding beliefs of low-income primigravidae. *Int J Nurs Stud.* 1997;34(2):144-50.
40. Moore ER, Coty MB. Prenatal and postpartum focus groups with primiparas: breastfeeding attitudes, support, barriers, self-efficacy, and intention. *J Pediatr Health Care.* 2006;20(1):35-46.
41. Shaker I, Scott JA, Reid M. Infant feeding attitudes of expectant parents: breastfeeding and formula feeding. *J Adv Nurs.* 2004;45(3):260-8.
42. Aghdas K, Talat K, Sepideh B. Effect of immediate and continuous mother-infant skin-to-skin contact on breastfeeding self-efficacy of primiparous women: a randomized control trial. *Women Birth.* 2014;27(1):37-40.
43. Craig HJ, Dietsch E. 'Too scary to think about': first time mothers' perceptions of the usefulness of antenatal breastfeeding education. *Women Birth.* 2010;23(4):160-5.
44. Ingram J, Johnson D, Copeland M, Churchill C, Taylor H. The development of a new breastfeeding assessment tool and the relationship with breast feeding self-efficacy. *Midwifery.* 2015;31(1):132-7.
45. Murphy E. 'Breast is best': infant feeding decisions and maternal deviance. *Sociol Health Illn.* 1999;21:187-208.



46. Heinig MJ, et al. Barriers to compliance with infant-feeding recommendations among low-income women. *J Hum Lact.* 2006;22(1):27-38.
47. Heinig MJ, et al. Sources and acceptance of infant-feeding advice among low-income women. *J Hum Lact.* 2009;25(2):163-72
48. Odom EC, Li R, Scanlon KS, Perrine CG, Grummer-Strawn L. Association of family and health care provider opinion on infant feeding with mother's breastfeeding decision. *J Acad Nutr Diet.* 2014;114(8):1203-7.
49. Hoddinott P, Pill R. A qualitative study of women's views about how health professionals communicate about infant feeding. *Health Expect.* 2000;3(4):224-233.
50. Campbell KJ, et al. A parent-focused intervention to reduce infant obesity risk behaviors: a randomized trial. *Pediatrics.* 2013;131(4):652-60.
51. Spinelli MG, Endicott J, Goetz RR. Increased breastfeeding rates in black women after a treatment intervention. *Breastfeed Med.* 2013;8(6):479-84.
52. Bentley ME, Dee DL, Jensen JL. Breastfeeding among low income, African-American women: power, beliefs and decision making. *J Nutr.* 2003;133(1):305S-309S.
53. Wright HJ, Walker PC. Prediction of duration of breast feeding in primiparas. *J Epidemiol Community Health.* 1983;37(2):89-94.
54. Britton C, McCormick FM, Renfrew MJ, Wade A, King SE. Support for breastfeeding mothers. *Cochrane Database Syst Rev.* 2007;(1):CD0011s.

55. Dennis CL, Hodnett E, Gallop R, Chalmers B. The effect of peer support on breast-feeding duration among primiparous women: a randomized controlled trial. *CMAJ*. 2002;166(1):21-8.
56. Hartley BM, O'Connor ME. Evaluation of the 'Best Start' breast-feeding education program. *Arch Pediatr Adolesc Med*. 1996;150(8):868-71.
57. Sciacca JP, Dube DA, Phipps BL, Ratliff MI. A breast feeding education and promotion program: effects on knowledge, attitudes, and support for breast feeding. *J Community Health*. 1995;20(6):473-90.
58. Street DJ, Lewallen LP. The influence of culture on breast-feeding decisions by African Americans and white women. *J Perinat Neonatal Nurs*. 2013;27(1):43-51.
59. Kelly AS, et al. Severe obesity in children and adolescents: identification, associated health risks, and treatment approaches: a scientific statement from the American Heart Association. *Circulation*. 2013;128(15):1689-712.
60. Riley WT, Rivera DE, Atienza AA, et al. Health behavior models in the age of mobile interventions: are our theories up to the task? *TBM*. 2011;1:53-71.
61. Free C, Phillips G, Watson L, et al. The effectiveness of mobile-health technologies to improve health care service delivery processes: A systematic review and meta-analysis. *PLoS Med*. 2013; 10(1):e1001363.
62. Hall, AK, Cole-Lewis H, Bernhardt JM. Mobile text messaging for health: a systematic review of reviews. *Annu Rev Public Health*. 2015; 36:393-415.

63. Krishna S, Boren SA, Balas EQ. Healthcare via cell phones: a systematic review. *Telemed J E Health*. 2009;15(3):231-240.

### Chapter III

64. Harris JE, et al. An introduction to qualitative research for food and nutrition professionals. *J Am Diet Assoc*. 2009;109(1):80-90.
65. Harris JE, Gleason PM, Sheean PM, Boushey C, Beto JA, Bruemmer B. An introduction to qualitative research for food and nutrition professionals. *J Am Diet Assoc*. 2009;109(1):80-90. doi: 10.1016/j.jada.2008.10.018.
66. Keith JF, Stastny S, Brunt A, Agnew W. Barriers and strategies for healthy food choices among american indian tribal college students: A qualitative analysis. *J Acad Nutr Diet*. 2018;118(6):1017-1026. doi: 10.1016/j.jand.2017.08.003.
67. Bazeley P, Jackson K. (2013). *Qualitative data analysis with NVivo*. London: Sage Publications.
68. Maguire M DB. Doing a thematic analysis: A practical, step-by-step guide for learning and teaching scholars. *Dundalk Institute of Technology*. 2017;3:3351-33514.

## Chapter V

69. Hoecker, J. When's the right time to start feeding a baby solid foods? Mayo Clinic. <https://www.mayoclinic.org/healthy-lifestyle/infant-and-toddler-health/expert-answers/starting-solids/faq-20057889>. Updated June 8, 2016. Accessed March 18, 2019.
70. Whitaker RC, Wright JA, Pepe MS, Seidel KD, Dietz WH. Predicting obesity in young adulthood from childhood and parental obesity. *N Engl J Med*. 1997;337(13):869-873. doi: 10.1056/NEJM199709253371301.
71. Baker JL, Olsen LW, Sørensen T, I.A. Childhood body-mass index and the risk of coronary heart disease in adulthood. *N Engl J Med*. 2007;357(23):2329-2337. doi: 10.1056/NEJMoa072515.
72. Stevens J, Cai J, Pamuk ER, Williamson DF, Thun MJ, Wood JL. The effect of age on the association between body-mass index and mortality. *N Engl J Med*. 1998;338(1):1-7. doi: 10.1056/NEJM199801013380101.
73. Franks PW, Hanson RL, Knowler WC, Sievers ML, Bennett PH, Looker HC. Childhood obesity, other cardiovascular risk factors, and premature death. *N Engl J Med*. 2010;362(6):485-493. doi: 10.1056/NEJMoa0904130.
74. Juonala M, Magnussen CG, Berenson GS, et al. Childhood adiposity, adult adiposity, and cardiovascular risk factors. *N Engl J Med*. 2011;365(20):1876-1885. doi: 10.1056/NEJMoa1010112.

75. Lloyd LJ, Langley-Evans S, McMullen S. Childhood obesity and adult cardiovascular disease risk: A systematic review. *Int J Obes.* 2010;34(1):18-28. doi: 10.1038/ijo.2009.61.
76. Ma J, Flanders WD, Ward EM, Jemal A. Body mass index in young adulthood and premature death: Analyses of the US national health interview survey linked mortality files. *Am J Epidemiol.* 2011;174(8):934-944. doi: 10.1093/aje/kwr169.
77. Morrison JA, Friedman LA, Wang P, Glueck CJ. Metabolic syndrome in childhood predicts adult metabolic syndrome and type 2 diabetes mellitus 25 to 30 years later. *J Pediatr.* 2008;152(2):201-206. doi: 10.1016/j.jpeds.2007.09.010.
78. Must A, Jacques PF, Dallal GE, Bajema CJ, Dietz WH. Long-term morbidity and mortality of overweight adolescents. *N Engl J Med.* 1992;327(19):1350-1355. doi: 10.1056/NEJM199211053271904.
79. Owen CG, Whincup PH, Orfei L, et al. Is body mass index before middle age related to coronary heart disease risk in later life? evidence from observational studies. *Int J Obes.* 2009;33(8):866-877. doi: 10.1038/ijo.2009.102.
80. Park MH, Falconer C, Viner RM, Kinra S. The impact of childhood obesity on morbidity and mortality in adulthood: A systematic

review. *Reviews*. 2012;13(11):985-1000. doi: 10.1111/j.1467-789X.2012.01015.x.

81. Tirosh A, Shai I, Afek A, et al. Adolescent BMI trajectory and risk of diabetes versus coronary disease. *N Engl J Med*. 2011;364(14):1315-1325. doi: 10.1056/NEJMoa1006992.

## **APPENDIX A**

IRB Approval Letter

## IRB Approval Letter



Institutional Review Board  
Office of Research and Sponsored Programs  
P.O. Box 425619, Denton, TX 76204-5619  
940-898-3378  
email: [IRB@twu.edu](mailto:IRB@twu.edu)  
<http://www.twu.edu/irb.html>

DATE: November 10, 2017

TO: Ms. Kathleen Davis  
Nutrition & Food Sciences

FROM: Institutional Review Board (IRB) - Denton

Re: *Approval for Parental Attitudes Towards Infant Feeding Practices, Early Obesity Prevention, and Infant Feeding Advice (Protocol #: 19815)*

The above referenced study has been reviewed and approved by the Denton IRB (operating under FWA00000178) on 11/10/2017 using an expedited review procedure. This approval is valid for one year and expires on 11/10/2018. The IRB will send an email notification 45 days prior to the expiration date with instructions to extend or close the study. It is your responsibility to request an extension for the study if it is not yet complete, to close the protocol file when the study is complete, and to make certain that the study is not conducted beyond the expiration date.

If applicable, agency approval letters must be submitted to the IRB upon receipt prior to any data collection at that agency. A copy of the approved consent form with the IRB approval stamp is enclosed. Please use the consent form with the most recent approval date stamp when obtaining consent from your participants. A copy of the signed consent forms must be submitted with the request to close the study file at the completion of the study.

Any modifications to this study must be submitted for review to the IRB using the Modification Request Form. Additionally, the IRB must be notified immediately of any adverse events or unanticipated problems. All forms are located on the IRB website. If you have any questions, please contact the TWU IRB.

cc: Dr. Shane Broughton, Nutrition & Food Sciences



## **APPENDIX B**

Focus Group & Interview Script

## Focus Group & Interview Script

### **Introduction & Purpose**

First of all, I would like to thank you all for taking time out of your day to come here and discuss your ideas. My name is Kathleen Davis,. I am an assistant professor at Texas Woman's University in the department of Nutrition and Food Sciences. My colleagues and I are working on a research study about early obesity prevention. In particular, we are interested in your views about ways of how infants should be fed, how you think feeding may affect overweight, and how you would like to receive feeding advice from your doctor.

- ✚ You are the experts, and we are here to learn from you.
- ✚ Your participation in this discussion is strictly voluntary.
- ✚ My assistant will be taking some notes, and we will also audio tape what you say so that we don't miss anything important. We may need to go back and review the information later, so we want to make sure we have the correct information.

### **Housekeeping**

The total length of time of the focus group meeting is expected to be about one hour. We will take a couple of breaks, and there are water and snacks available.

As far as the focus groups are concerned, here are a few ground rules:

- ✚ I might move you along in conversation. Since we have limited time, I'll ask that questions or comments off the topic be answered after the focus group session.
- ✚ I'd like to hear everyone speak so I might ask people who have not spoken up to comment.
- ✚ Please respect each other's opinions. There's no right or wrong answer to the questions I will ask. We want to hear what each of you, and it's okay to have different opinions.
- ✚ We'd like to stress that we want to keep the sessions confidential, so we ask that you not use names or anything directly identifying when you talk about your personal experiences. We also ask that you not discuss other participants' responses outside of this group discussion. However, because this is in a group setting, the other individuals participating will know your responses to the questions; and we cannot guarantee that they will not discuss your responses outside of the focus group.

### *Do you have any questions so far?*

Again, your participation here today is totally voluntary. You may leave the focus group or completely withdraw from the study at any time.

### **Focus Group Questions**

Now we will begin with our questions. Please speak clearly, and avoid speaking over each other. Everyone will have the opportunity to talk.

- ✚ What are your thoughts about breastfeeding your baby?
- ✚ What are your thoughts about using formula to feed your baby?
- ✚ Tell me your thoughts on when the best time is to begin feeding your baby something other than breastmilk or formula.
- ✚ What types of foods do you think are the best to begin feeding your baby?
- ✚ What do you think about offering your baby sweetened foods or drinks?
- ✚ What do you think might cause some babies or children to become overweight?
- ✚ What information would you like to receive from your healthcare provider about feeding your baby?
- ✚ What are your thoughts about receiving information about feeding by text messaging?

### **Wrap-up**

We've come to the end of our questions. I want to thank you for your honest opinions; you were tremendously helpful at this very early, but very important stage of our study. We really appreciate your help! If you have any questions or concerns, I'll be happy to talk with you. Again, thank you for your time! Please remember that everything discussed here today is confidential and should not be shared with anyone outside of this group.