The Development of Evidence-based Early Child Feeding and Obesity Prevention Messages for Parents of Children Birth to 2 Years Old

Rebecca L. Heller

University of Connecticut - Storrs, heller.becca@gmail.com

Follow this and additional works at: https://opencommons.uconn.edu/dissertations

Recommended Citation
https://opencommons.uconn.edu/dissertations/2113
The Development of Evidence-based Early Child Feeding and Obesity Prevention Messages for Parents of Children Birth to 2 Years Old

Rebecca L. Heller, PhD
University of Connecticut, 2019

Early childhood obesity from birth to 2-years (B-24) is a growing public health concern. The current lack of consistent and comprehensive child feeding materials may contribute to barriers in childhood obesity prevention. The purpose of this study was to identify barriers preventing parents of B-24 from implementing optimal feeding and obesity prevention practices and develop evidence-based messages to overcome these barriers.

For Phase 1 and 2, one-on-one interviews were audio-taped, transcribed, and thematic analysis was conducted. Phase 1 interviews with healthcare, community-based, and education providers working with families of B-24 identified barriers faced when promoting obesity prevention. Providers reported parental practices of overfeeding, early and inappropriate initiation of solids, lack of child autonomy and self-regulation, and unbalanced diets from cultural, familial, and media influences, and lack of knowledge. Phase 2 interviews with parents of B-24 identified information needed regarding child feeding practices. Overarching themes included meal preparation, optimal intake, affordable healthy foods, child self-feeding, and food and ingredient knowledge. Low-income parents needed information on preparation skills and proper amounts whereas non-low-income parents sought information on safety concerns and transitioning to solids. Phase 3 interviews with parents of B-24 tested messages related to findings in Phase 1 and 2 to determine potential effectiveness. Interviews were recorded by note-taking, thematic analysis was conducted for qualitative data, and descriptive statistics for quantitative data.
Parents reported the material as easy to understand, relevant, and feasible to implement. Future research should evaluate the impact of message implementation and outreach with parents on childhood obesity risk.
The Development of Evidence-based Early Child Feeding and Obesity Prevention Messages for Parents of Children Birth to 2 Years Old

Rebecca L. Heller

B.S., Rutgers University, 2012
M.S., University of Connecticut, 2018

A Dissertation
Submitted in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy
at the
University of Connecticut

2019
Doctor of Philosophy Dissertation

The Development of Evidence-based Early Child Feeding and Obesity Prevention Messages for Parents of Children Birth to 2 Years Old

Presented by

Rebecca L. Heller, MS, RD

Major Advisor____________________________________________________________ Amy R. Mobley, PhD, RD

Associate Advisor_________________________________________________________ Nancy R. Rodriguez, PhD, RD, FACSM

Associate Advisor_________________________________________________________ Michael J. Puglisi, PhD, RD

Associate Advisor_________________________________________________________ Jennifer L. Harris, PhD, MBA

Associate Advisor_________________________________________________________ Marlene B. Schwartz, PhD

University of Connecticut
2019
ACKNOWLEDGEMENTS

I would first like to thank all my committee members for their assistance and guidance throughout my time at the University of Connecticut. My major advisor, Dr. Amy Mobley, accepted me as a PhD student to begin my graduate school career. She provided guidance during my first years, and gave me tremendous independence and responsibility in the following years to develop my skills as a researcher. Dr. Nancy Rodriguez was a supportive committee member and professor who taught me essential nutrition knowledge that was the foundation of my expertise as a researcher. Dr. Michael Puglisi was always willing to review my writing and made time to discuss research strategies and ideas. Dr. Jennifer Harris was a committee member providing me valuable feedback, and a supervisor who gave me the opportunity to collaborate on multiple research initiatives at the Rudd Center for Food Policy and Obesity. Dr. Marlene Schwartz provided feedback and edits throughout my candidacy exams and dissertation writing.

I also want to thank the UConn Graduate School for accepting me into the Outstanding Scholars Program, which provided me with the fellowship to financially support my first three years of graduate research. Another thank you to the Child Health and Development Institute of Connecticut, Inc. for accepting the grant proposal that supported my dissertation research.

Finally, I would like to thank my friends and family. My friends who gave me a support system from both near and far, and a home away from home here in Connecticut. Thank you to my mother, who always pushed me to be the best at everything that I do; my stepmother, who believed that I would succeed at anything I tried; and a special thank you to my father, my rock and biggest fan who taught me to always work as hard as you need to in order to achieve your greatest dreams.
TABLE OF CONTENTS

Acknowledgements...........................................................................................................iv

List of Tables......................................................................................................................viii

List of Figures....................................................................................................................ix

Chapter 1: Introduction........................................................................................................1

Chapter 2: Literature Review...............................................................................................4

  2.1 Obesity in the United States.........................................................................................4
    2.1.1 Prevalence and Trends.........................................................................................5
    2.1.2 Minority and Low-Income Populations.................................................................6

  2.2 Children’s Dietary Intake and Behaviors.................................................................7
    2.2.1 Parental Influences.............................................................................................9
    2.2.2 Influence of Providers.........................................................................................10

  2.3 Child Feeding Practices..............................................................................................11
    2.3.1 Responsive Feeding...........................................................................................14

  2.4 Modifying Child Feeding Practices...........................................................................16
    2.4.1 Health Messaging...............................................................................................19
    2.4.2 Current Child Feeding Resources......................................................................22

Chapter 3: A Qualitative Investigation of Healthcare and Education Providers’ Perceptions

  Regarding Parental Implementation of Optimal Feeding Practices to Prevent Obesity in Children Birth to 2 Years.................................................................24

    3.1 Introduction............................................................................................................24
    3.2 Methods................................................................................................................25
Chapter 4: Parental Perceptions of Key Topics in Early Child Feeding Materials by Socioeconomic Status

4.1 Introduction
4.2 Methods
4.3 Results
4.4 Discussion
4.5 Conclusion

Chapter 5: The Development and Testing of a Set of Child Feeding and Obesity Prevention Messages

5.1 Introduction
5.2 Methods
5.3 Results
5.4 Discussion
5.5 Conclusion

Chapter 6: Conclusion

6.1 Major Findings
6.2 Strengths
6.3 Limitations
6.4 Future Directions

Appendices

Appendix A: IRB Re-approval for Interviews with Providers
Appendix B: Information Sheet for Interviews with Providers.................................92
Appendix C: Interview Script for Interviews with Providers.................................94
Appendix D: IRB Approval for Interviews with Parents.............................................96
Appendix E: Flyer for Parent Interview Recruitment in English.............................97
Appendix F: Flyer for Parent Interview Recruitment in Spanish.............................98
Appendix G: Consent Form for Interviews with Parents in English..........................99
Appendix H: Consent Form for Interviews with Parents in Spanish.........................101
Appendix I: Parent Demographic Questionnaire for Interviews with Parents..........103
Appendix J: Interview Script for Interviews with Parents.......................................108
Appendix K: IRB Exemption for Message Testing Interviews.................................111
Appendix L: Flyer for Message Testing Interviews Recruitment..............................112
Appendix M: Information Sheet for Message Testing Interviews............................113
Appendix N: Parent Demographic Questionnaire for Message Testing Interviews.....115
Appendix O: Interview Script for Message Testing Interviews...............................117
Appendix P: Final Message Sheets in English......................................................118
References...........................................................................................................122
LIST OF TABLES

Chapter 3

Table 3.1. Interview questions with providers to determine perceived practices, barriers and educational opportunities to prevent early childhood obesity of children ages birth to 2 years old

Table 3.2. Emerging qualitative research themes identified by providers regarding observed feeding practices of parents, barriers and educational opportunities for early childhood obesity prevention

Chapter 4

Table 4.1. Interview Script

Table 4.2. Parent Demographics

Table 4.3. Thematic Results of Parent Requested Educational Topics Regarding Child Early Feeding Stratified by Income Level

Chapter 5

Table 5.1. 12 Core Feeding Messages Mapped to Responsive Feeding Practices

Table 5.2. Parent Demographics (n=23)

Table 5.3. Themes of 12 Core Messages and Comprehension Based on Perceived Message Behavior by Parents (n=23)

Table 5.4. Relevance and Feasibility of 12 Core Messages (n-23)
LIST OF FIGURES

Chapter 5 ..........................................................................................................................57

Figure 5.1. Sample Message Sheet in English.................................................................85

Figure 5.2. Sample Message Sheet in Spanish.................................................................86
Chapter 1: Introduction

Childhood obesity has been a growing epidemic and public health concern over the past decade due to the short- and long-term consequences (NIH, 2017; CDC, 2017). In 2011, about one in every 10 children under 2 years of age in the United States had a weight-for-length percentile classified as obese (Ogden et al., 2014; Pan et al., 2013). This rate doubled during the next year of life indicating higher obesity prevalence by the time children reach preschool ages. The greatest prevalence and burden from childhood obesity can be seen in low-income and underserved populations as well as minority racial and ethnic groups (CDC, 2009; Ogden et al., 2014). Children who are obese are more likely to be obese as adults and have increased risks of obesity-related health problems later in life (NIH, 2017).

The rising obesity rates have been linked to increasing energy balance secondary to caloric intake and age-inappropriate dietary patterns (NIH, 2017; Siega-Riz et al., 2010). Children’s dietary behaviors are first formed during the critical ages of birth to 2 years (Birch & Doub, 2014). This is the time when children are introduced to new foods and transition to an adult style diet. Parents and caregivers serve as the primary direct influence on children’s intake through the types of foods they introduce and the methods they use to do so (Birch & Davison, 2001; Patrick & Nicklas, 2005; Rhee, 2008). Recent guidelines have deemed responsive feeding practices as one of the key dimensions for parental impacts on early childhood obesity prevention (Pérez-Escamilla et al., 2017). These responsive feeding practices encourage self-regulation and cognitive, emotional, and social development in young children. By promoting responsive feeding practices starting from birth, children could maintain improved recognition and response to their hunger and satiety cues (Birch & Davison, 2001). These practices include
creating a positive feeding environment, feeding in response to children’s hunger cues, and providing developmentally appropriate foods. This would allow them to better regulate their dietary intake as they age based on their physiological needs, decreasing excessive caloric intake, and decreasing risk of childhood obesity. These early feeding practices form dietary preferences and behaviors that continue to affect intake throughout adolescence and even into adulthood which can affect their long-term health and weight outcomes.

Despite the evident impact on dietary behaviors and health outcomes, there is limited research-based educational outreach currently targeting child feeding practices for birth to 2-year-olds (Ciampa et al., 2010; Dwyer et al., 2010). One barrier to providing this educational information is the lack of uniform federal dietary guidelines and child feeding messages that would support healthy dietary patterns and weight outcomes for children from birth to 2 years old (Raiten et al., 2014). While there are resources for educational outreach for parents, several professional agencies that provide child health information are sometimes promoting conflicting early child feeding information and guidelines (AAP, 2013; Gartner et al., 2005; Gidding et al., 2005). These conflicting messages may further contribute to inadequate or inappropriate feeding practices through increased confusion among parents and caregivers about proper timing and techniques to implement in early child feeding practices (Dwyer et al., 2010).

To address the growing issue of early childhood obesity, it is essential to provide parents and caregivers with evidence-based child feeding messages that include information for developmental milestones within the birth to 2-year age range. A recent child obesity report indicated that having a consistent set of evidence-based childhood obesity prevention messages to disseminate to parents of children ages birth to 2 years and providers who serve them is a key strategy in the current effort to prevent early childhood obesity and to inform future United...
States dietary guidance (Rafael Pérez-Escamilla & Meyers, 2014). Developing effective messages requires a critical understanding of potential barriers to implementing current recommendations, where parents currently receive feeding information, beliefs and practices about child feeding, how best to frame potential messages given those beliefs, and preferred means to disseminate child feeding messages for the prevention of childhood obesity.

The overall purpose of this research is to identify barriers that prevent parents of children ages birth to 2 years from implementing optimal child feeding and obesity prevention practices and to develop and disseminate evidence-based messages containing strategies to overcome these barriers. The overall dissertation aims are:

Aim 1: To determine misconceptions and barriers that prevent parents of birth to 2-year-olds from implementing early childhood obesity prevention practices as reported by healthcare, community-based, and education providers.

Aim 2: To determine the child feeding related topics that parents of birth to 2-year-olds need information on in order to promote optimal early childhood eating behaviors.

Aim 3: To develop and test a set of comprehensive, evidence-based child feeding and obesity prevention messages to determine comprehension, feasibility, and importance for parents of birth to 2-year-olds.
Chapter 2: Literature Review

2.1 Obesity in the United States

Obesity has been a growing public health concern across the globe with rates steadily increasing over the past two decades (Hales, Carroll, Fryar, & Ogden, 2017). In the United States, this reached an all-time high in 2016 with almost 40% of the adult population having a BMI, a ratio of weight to height, classified as obese. Obesity is one of the shared risk factors for many chronic conditions and diseases including metabolic syndrome, osteoarthritis, and the leading causes of preventable premature death; type 2 diabetes, cardiovascular disease, stroke, and several types of cancer (Centers for Disease Control and Prevention, 2018b; Koene, Prizment, Blaes, & Konety, 2016; National Institutes of Health (NIH), 2017). Overweight and obese BMI are also one of the few modifiable risk factors associated with overall mortality rates worldwide (Global BMI Mortality Collaboration, 2016).

Overweight and obesity are not just issues seen in the adult population, as childhood obesity rates have been slowly increasing as well (Centers for Disease Control and Prevention, 2017; Hales et al., 2017; Ogden et al., 2014). Weight status in children are measured through BMI percentiles to take into account changes in height and weight for specific ages and sex (Centers for Disease Control and Prevention, 2017; A. C. Skinner & Skelton, 2014). A BMI percentile at or above the 85th is defined as overweight and at or above the 95th is obese (Centers for Disease Control and Prevention, 2017). The negative health outcomes of childhood obesity have been associated with increased US health care costs of about $19,000 per child with obesity as compared to their normal weight counterparts (Finkelstein, Graham, & Malhotra, 2014). Children who are overweight or obese are more likely to suffer from physical and psychological
problems and are at greater risk for developing high cholesterol or blood pressure, prediabetes, and type 2 diabetes (National Institutes of Health (NIH), 2017). In addition to these childhood health concerns, children who are obese are also more likely to be obese as adults and have increased risks of obesity-related health problems later in life.

2.1.1 Prevalence and Trends

Childhood obesity rates in the US are over three-fold higher than 30 years ago, and have been rising slowly and steadily over the past decade (Ogden, Carroll, Kit, & Flegal, 2012; Ogden et al., 2014). As of 2016, a third of all children in the US were overweight and over 18% classified as obese (A. C. Skinner & Skelton, 2014). Recent reports have categorized obesity rates by age group, indicating prevalence of 8.1% among 0 to 2-year-olds, 13.9% among 2- to 5-year-olds, 18.4% among 6- to 11-year-olds, 20.6% among 12- to 19-year-olds, and 37.9% of adults ages 20 years and older (Hales et al., 2017; Ogden et al., 2014). These trends show the growing epidemic of childhood obesity in the US, and the clear increase in obesity rates throughout the lifespan. Targeting early childhood ages has been identified as an essential obesity prevention strategy (Anzman, Rollins, & Birch, 2010; Nader et al., 2012; Rafael Pérez-Escamilla & Meyers, 2014). By addressing the obesity epidemic early on, it may be possible to slow this dramatic increase in obese weight status throughout the ages. Research also indicates that obesity may be more difficult to reverse if children are already obese by 5 years of age (Cunningham, Kramer, & Narayan, 2014). Children that developed obesity during school-aged years were primarily overweight in their early childhood. This further supports the need to focus initiatives on early childhood obesity prevention.
2.1.2 Minority and Low-Income Populations

Although childhood obesity is an issue throughout the general population, there are several sociodemographic groups that have even greater prevalence and burden of obesity and obesity-related health outcomes. The most recent US Census data indicates that overall poverty rates have been decreasing slightly over the past few years (Fontenot, Semega, & Kollar, 2018). However, poverty rates have increased for higher educated individuals, and total income remains lower for households maintained by women and Hispanic minorities. Although the rates of children in low-income households has been decreasing as well, 41% of all children in the US remain in low-income families (Koball & Jiang, 2018). Additionally, the rates of low-income children surpass those of adults and are even higher in children under 3 years of age (Y. Jiang, Granja, & Koball, 2017; Koball & Jiang, 2018). Comparisons by race and ethnicity show the highest prevalence of low-income children are in the Hispanic population. Children in low-income communities are up to twice as likely to be overweight or obese compared to children in higher socioeconomic groups (The State of Obesity, 2018). This high rate of overweight and obesity is particularly daunting due to the lack of resources available to low-income populations and communities (Centers for Disease Control and Prevention (CDC), 2009a). This includes access to stores that provide healthy affordable foods, safe accessible space for physical activity, and availability of health information at appropriate literacy levels.

The National Health and Nutrition Examination Survey data from 2011 to 2014 found significant differences in obesity prevalence based on ethnicity (Ogden et al., 2015). The highest obesity rates are seen in many minority racial and ethnic groups (Hales et al., 2017; Ogden et al., 2014). Across the total US youth population, the highest rates of childhood obesity were seen in the Hispanic population at 25.8% based on the 2015-2016 NHANES data (Hales et al., 2017).
This prevalence may be partially affected by the higher percentage of Hispanic children in low-income households. However, a longitudinal investigation has found that the main increase in childhood obesity risk for minority ethnic groups was related to infancy and early childhood feeding and behavioral factors (Elsie M. Taveras, Gillman, Kleinman, Rich-Edwards, & Rifas-Shiman, 2013). Since Hispanic child populations have the highest rates of obesity, and low-income children have the highest burden from obesity, these sociodemographic groups should be considered when addressing childhood obesity.

2.2 Children’s Dietary Intake and Behaviors

One of the primary causes of obesity is an energy imbalance, which in young children is often due to excess caloric or discretionary food intake (Centers for Disease Control and Prevention, 2017; National Institutes of Health & National Heart Lung and Blood Institute, 2017). In a state of positive energy balance the body stores this fuel for future use, leading to additional fat deposition and eventually increasing BMI percentiles. The Dietary Guidelines for Americans emphasize the importance for children to maintain an energy balance that promotes normal growth without excess weight gain through dietary intake (US Department of Agriculture & US Department of Health and Human Services, 2015). To promote optimal intake, it is necessary to address factors that impact children’s intake and behaviors for both short- and long-term dietary effects.

Children learn a great deal about food through their own experiences (L L Birch & Davison, 2001; Patrick & Nicklas, 2005). During the first year of life, children will develop food preferences and eating patterns that directly affect dietary intake. Food preferences developed during early childhood have been shown to reflect food choices made later in life (J. D. Skinner,
Although food preferences rely on children’s sensory evaluations of foods, they are also formed based on environment and immediate effects of consumption (L L Birch & Davison, 2001; Patrick & Nicklas, 2005). One of the challenges during the development of food preferences is food neophobia, which is characterized by the rejection of trying new or unfamiliar foods. Children naturally avoid unknown foods to protect themselves from potential danger, but this neophobia can prevent optimal dietary intake. Increasing exposure to new foods is one method to combat food neophobia, since it increasing familiarity with foods, and has been linked with improved dietary intake, increased dietary variety, and increased fruit and vegetable preferences in children (Howard, Mallan, Byrne, Magarey, & Daniels, 2012; Johnson, 2016; Wardle et al., 2003).

The physical food environment also plays a role in children’s food intake, as well as increasing food exposure (Johnson, 2016; Larson & Story, 2009; Patrick & Nicklas, 2005). Food availability refers to the presence of food within the physical environment. This may consist of the home, child care facility, or any other environment where the child consumes meals or snacks. Availability of specific food options, including healthy or discretionary foods, have been associated with increased intake of those foods even despite food preferences (Cullen et al., 2003; Johnson, 2016; Larson & Story, 2009). Food accessibility more specifically denotes food that is easily reached and ready to be eaten (Cullen et al., 2003; Johnson, 2016; Patrick & Nicklas, 2005). Highly accessible foods are found to be more likely selected and consumed by children.
2.2.1 Parental Influences

Although children learn from their own experiences with food, external influences have a substantial impact on their food choices (Hoffmann et al., 2016; Kiefner-Burmeister et al., 2014; Patrick & Nicklas, 2005). Eating behaviors in children overall are affected largely by social determinants (Hoffmann et al., 2016; Wang et al., 2013). School-aged children and adolescents show a strong reliance on community-based influences when implementing eating behaviors (Larson & Story, 2009; O’dea, 2003; Patrick & Nicklas, 2005). Social and peer networks have been shown to influence the selection of different foods and may either improve healthy food intake or serve as a potential barrier to healthy food consumption.

Younger children are more heavily affected by their parents as influences to their dietary intake (L L Birch & Davison, 2001; Hoffmann et al., 2016; Kiefner-Burmeister et al., 2014; Patrick & Nicklas, 2005). At these early ages, parental feeding practices are closely tied to the development of eating behaviors. Parents influence their children’s eating behaviors through their own eating behaviors, attitudes and beliefs, and the implementation of actual feeding practices and techniques they utilize with their children (Anzman et al., 2010; Hoffmann et al., 2016; R Pérez-Escamilla, Segura-Pérez, & Lott, 2017). At these young ages, children typically learn by observing those around them and mimicking the behaviors of their closest interpersonal connections, which are most often the parent or caregiver (Patrick & Nicklas, 2005; Rhee, 2008). Parent modeling of healthful eating behaviors and attitudes have been shown to improve diet quality in children, and their diets are positively related to one another (Jennifer Orlet Fisher, Mitchell, Smiciklas-Wright, & Birch, 2002; Tibbs et al., 2001).

Parental food attitudes and beliefs can affect the physical environment and practices they implement with their children (Johnson, 2016; Russell et al., 2016). While the physical
environment has a substantial impact on children’s dietary intake, parents and caregivers typically shape the children’s food environment (L L Birch & Davison, 2001; Larson & Story, 2009; Rhee, 2008). They serve as gatekeepers of food by determining what foods are made available in the household and accessible to the child. An increase in availability and accessibility to healthy food items has been linked to parental beliefs of healthfulness of certain foods, importance of health benefits, and ability to impact child’s food acceptance (Hildebrand & Betts, 2009; Shriver, Hildebrand, & Austin, 2010). Parents can also directly influence children’s intake through the types of foods they introduce and the methods they use to do so (L L Birch & Davison, 2001; Patrick & Nicklas, 2005; Rhee, 2008). Parents’ implementation of specific feeding practices and techniques has been associated with their beliefs about children’s needs and preferences, health benefits, perceived effects of their feeding practices, and the perception of successful parenting (Harrison, Brodribb, & Hepworth, 2016; Russell et al., 2016).

2.2.2 Influence of Providers

During infancy and early childhood years, parents interact frequently with child health professionals, including healthcare, community-based, and education providers (Hughes et al., 2007; Matvienko-Sikar et al., 2018). This regular interaction revolves around the health and wellbeing of their children, leading to reported levels of trust and rapport between parents and providers (Bourgeois, Brauer, Simpson, Kim, & Haines, 2016). Parents of young children and providers have conveyed a desire for child dietary and behavioral information delivered through their providers. Thus, for the first few years of a child’s life, essential resources for child dietary information are often disseminated to parents by providers.
Providers are a central source and influence when delivering early child dietary and behavioral information and materials (Barlow & Expert Committee, 2007; S. R. Daniels, Hassink, & Committee on Nutrition, 2015). Providers not only have rapport with parents but are also more capable and experienced at promoting health practices, assessing potential dietary issues, and addressing these issues with parents. Due to their role in a child’s health and development over time, they can provide educational information in context with the child’s and family’s background. Healthcare, community-based, and education providers have been seen to significantly influence child feeding practices, including positive and negative outcomes, by working directly with and in conjunction with parents and caregivers (Hughes et al., 2007; Kim & Peterson, 2008; Matvienko-Sikar et al., 2018; Spiby et al., 2009).

2.3 Child Feeding Practices

Children’s dietary behaviors are first formed during the critical ages of birth to 2 years (Birch & Doub, 2014). This is the time when children are introduced to new foods and transition to an adult style diet. Early child feeding practices may influence dietary behaviors and patterns that continue to affect intake throughout adolescence and even into adulthood. Child feeding practices has been identified as one of the direct factors influencing the development of child eating behaviors, which is further linked to weight outcomes and obesity risk (Daniels et al., 2015; Savage et al., 2016; Wen et al., 2012).

Examples of restrictive child feeding practices include when the parent limits child access or consumption of specific foods or overall amounts (Savage, Fisher, & Birch, 2007). Use of restrictive feeding practices is positively correlated to parental concern about their child’s weight (Gregory, Paxton, & Brozovic, 2010). Even if parents may intend for these practices to improve
children’s dietary intake and quality, it has been linked to opposite outcomes. Higher restriction has been associated with higher levels of disinhibited eating and weight status in children (Joyce & Zimmer-Gembeck, 2009). Overt restriction of palatable foods may actually increase a child’s attention or desire for those particular foods, and persistent restriction has been associated with increased selection and intake of the restricted food items once they are made available (J.O. Fisher & Birch, 1999; J O Fisher & Birch, 1999). Although restriction in infants and young toddlers have been associated with lower weight status, this effect is not seen as the child ages and has more opportunity to select his or her own foods (Leann L Birch, Fisher, & Davison, 2003; Farrow & Blissett, 2008). The use of restriction at younger ages has been longitudinally associated with girls’ eating in the absence of hunger later in childhood (Leann L Birch et al., 2003).

Pressure to eat is a child feeding practice in which the parent coaxes a child to eat in response to the presence of food, regardless of the child’s hunger status (L L Birch & Davison, 2001). The purpose of this practice is typically to increase the child’s food intake or encourage the intake of specific foods. Pressure to eat has been positively associated with food and calorie intake, and speed of eating (Drucker, Hammer, Agras, & Bryson, 1999). Some studies have found correlations between pressure to eat and lower intake of calorie dense foods and child body weight (Farrow & Blissett, 2008; Lee & Keller, 2012). However, parents tend to use more pressure to eat practices as a response to a child’s refusal of food and parental concern of the child being underweight (Gregory et al., 2010; Klesges et al., 1983). This practice does have behavioral eating outcomes in children, seen through an increase in emotional eating and decreased dietary restraint even in young ages (Carper, Orlet Fisher, & Birch, 2000). The
persistent coaching to consume more food, even past satiation, and for external as opposed to physiological cues can lead to these emerging dietary behaviors.

Instrumental feeding practices are implemented when foods are given as rewards or withheld as a form of punishment (Wardle, Sanderson, Guthrie, Rapoport, & Plomin, 2002). The use of a particular food as a reward has been shown to increase a child’s preference for that food, even after the food rewards are no longer used (Leann Lipps Birch, Zimmerman, & Hind, 1981). The majority of parents report using high-sugar and high-fat foods as rewards, which would therefore increase the child’s preference and desire to consume these foods. Food punishments involve the restriction of certain foods, which again can increase a child’s desire for and future consumption of those foods (J.O. Fisher & Birch, 1999; J O Fisher & Birch, 1999).

Emotional feeding refers to a practice in which parents provide food or beverages to their child in order to regulate their child’s emotions, or to soothe signs of distress (Blissett, Haycraft, & Farrow, 2010; Hoffmann et al., 2016). Parents that perceived their child having a more negative temperament were more likely to implement emotional feeding practices (Stifter, Anzman-Frasca, Birch, & Voegtline, 2011). Additionally, infants and toddlers of parents who reported using more emotional feeding techniques were found to have higher weight outcomes. The use of emotional feeding practices is also positively correlated with preschool children eating in the absence of hunger and exhibiting emotional eating, or overeating in the context of a negative mood (Blissett et al., 2010). The foods typically consumed during emotional feeding or emotional eating include sweet and palatable items. These behaviors promote excess dietary intake which further increase future obesity risks.

Other child feeding practices include specific timing and techniques of introducing foods and advancing a child’s diet. These techniques implemented during early childhood have direct
effects on the child’s intake and long-term health implications (Dwyer et al., 2010). For example, introduction of solid foods to formula-fed or weaned infants prior to 4 months of age was longitudinally associated with obesity at 3 years of age (Huh, Rifas-Shiman, Taveras, Oken, & Gillman, 2011). Exclusive breastfeeding or formula-feeding and no complementary foods until at least 4 months of age has been associated with lower rates of disease, such as asthma, infection and allergies, including eczema, and obesity later in life (Greer, Sicherer, Burks, Committee on Nutrition, & Section on Allergy and Immunology, 2008; Prell & Koletzko, 2016). When introducing healthy foods, such as fruits and vegetables, multiple and repeated exposures has been associated with an increased acceptance and preference for these foods (Patrick & Nicklas, 2005; Ventura & Birch, 2008; Wardle et al., 2003). This familiarity also increased children’s dietary intake of these healthy food items. These different feeding practices have been linked to children’s dietary intake, as well as their future health and weight status.

2.3.1 Responsive Feeding

Many feeding recommendations consider the fact that parents control certain circumstances in child feeding, including providing a positive feeding environment, stable mealtime schedule, and healthy food options to choose from (R Pérez-Escamilla et al., 2017; Satter, 1995). However, it is also necessary for the child to control whether they eat and the quantity. Enforcing too much control over a child’s intake may result in less sensitivity to the child’s needs, both emotionally and physically in regards to feeding (El-Behadli, Sharp, Hughes, Obasi, & Nicklas, 2015). Too little control may lack the structure and support that children require as a foundation to developing their healthy eating behaviors. Allowing children some control over their intake has shown to improve dietary behaviors, including associated increases
in fruit and vegetable intake (Kröller & Warschburger, 2008). Similarly, increased parental control of intake has been negatively correlated with fruit and vegetable consumption in toddlers and preschoolers (Wardle, Carnell, & Cooke, 2005). Parental versus child control of intake is often associated with other feeding practices, including restriction and pressure to eat (Tan & Holub, 2011). Control over a child’s intake is related to energy regulation and a child’s ability to self-regulate. To address the importance of feeding practices that support the growth and ability for children to become healthy self-regulated eaters, responsive feeding policies and programs have been a key focus of recent recommendations (Engle & Pelto, 2011).

Recent guidelines have deemed responsive feeding as one of the key dimensions for parental impacts on early childhood obesity prevention (Pérez-Escamilla et al., 2017). Responsive feeding relies on the verbal and nonverbal communication between a parent or caregiver and the child being fed (Black & Aboud, 2011). This process must include a positive feeding environment with healthy food options during a time when the child is likely hungry, encouraging and being aware of the child’s hunger and satiety signals, and responding promptly to these signals in a supportive and appropriate manner. Parent responsivity supports the child’s attentiveness to physiological signals, and ultimately to their own responsibility for healthy eating. These responsive feeding practices encourage self-regulation and cognitive, emotional, and social development in young children (Black & Aboud, 2011; R Pérez-Escamilla et al., 2017). Non-responsive feeding takes control away from the child, and is seen in many feeding practices that associate food with purposes other than satiation, including food rewards, emotional feeding, and pressure to eat (Silva, Costa, & Giugliani, 2016). Although there is still a need for more rigorous prospective and longitudinal studies, findings suggest an association between non-responsive feeding and rapid weight gain (DiSantis, Hodges, Johnson, & Fisher,
By promoting responsive feeding practices starting from birth, children could maintain improved recognition and response to their hunger and satiety cues (L L Birch & Davison, 2001). This would allow them to better regulate their dietary intake as they age based on their physiological needs, decreasing excessive caloric intake, and decreasing risk of obesity.

2.4 Modifying Child Feeding Practices

Early childhood obesity prevention during the developmental ages of birth to 2 years has been a growing focus in current research because of the significant health and financial impacts (Raiten et al., 2014). In order to prevent negative health outcomes related to childhood obesity, efforts are needed to improve early feeding practices that may influence child dietary intake and behaviors. Despite the need for early feeding and obesity interventions, previous prevention efforts have mainly targeted school-aged children (Wang et al., 2013). A current focus in early obesity prevention is essential, as obesity is more difficult and costly to treat and reverse the effects once children are in the late preschool years (Cunningham et al., 2014; Finkelstein et al., 2014). Parent-targeted interventions have been found as an effective means of improving a child’s food environment and behaviors, and in reducing the risk of child overweight (Golan, 2006). Thus, it is vital to focus on influencing parents’ early child feeding practices as a means of obesity prevention.

The earliest child feeding interventions begin at birth and focus on improving breastfeeding or formula feeding practices, and delaying introduction of solid foods. Many interventions that were initiated at the time of birth either increased the attempts for breastfeeding, breastfeeding rates, or prolonged the time of breastfeeding (Edwards et al., 2013; H. Jiang et al., 2014; Li Ming Wen, Baur, Simpson, Rissel, & Flood, 2011). On the contrary, one
An intervention aiming to increase responsiveness to infant satiety cues during bottle feeding was found to be ineffective at improving bottle feeding behaviors or amount of formula intake (Kavanagh, Cohen, Heinig, & Dewey, 2008). Another study focused on infants beginning at 2 months of age resulted in lower use of optimal feeding practices, including introduction of solid foods prior to 4 months of age (Hoare, Wright, Wilson, & Weaver, 2012). Of all these interventions, the ineffective trials included only one educational session, as opposed to repeated or prolonged information exposure and materials, and focused on one specific age-related practice. Other interventions aimed at delaying the introduction of solid foods were found to be effective at either 4 or 6 months if the intervention was initiated at the time of birth (Black, Siegel, Abel, & Bentley, 2001; de Oliveira, Giugliani, Santo, & Nunes, 2012; Paul et al., 2011; Scheinmann, Chiasson, Hartel, & Rosenberg, 2010; Schroeder et al., 2015; E M Taveras et al., 2011; Taylor et al., 2017).

Other interventions have been successful in reducing obesogenic feeding practices through regular intervention delivery over a prolonged period of time, including informational materials or a trained professional, and covering a range of feeding topics from infancy to toddlerhood. These approaches have been associated with a decrease in the use of food rewards, or instrumental feeding practices, for parents of children from birth to 2 years of age (L A Daniels et al., 2012; Spence, Campbell, Crawford, McNaughton, & Hesketh, 2014a; L. M. Wen et al., 2012), and even have a long-term impact into preschool years (L. A. Daniels et al., 2015). Pressure to eat was also decreased using similar, and in some cases the same intervention methods, in short- and long-term studies (L. A. Daniels et al., 2015; L A Daniels et al., 2012; Fangupo et al., 2015). Further, emotional feeding was also decreased during a long-term longitudinal studies (L. A. Daniels et al., 2015). Responsive feeding by parents, overall, was
improved using these methods, including increasing child control of intake, responsiveness to child cues, and the knowledge and use of recommended feeding practices (L A Daniels et al., 2012; Lynne Allison Daniels et al., 2014; Fangupo et al., 2015).

Many interventions that focus on improving parental child feeding practices have been found to positively impact children’s dietary intake and behaviors. Characteristics of effective studies included an approach that was parent-focused, involved information delivery throughout infant and toddlerhood, and included topics addressing child feeding (Cameron et al., 2014; Campbell et al., 2013; Hohman, Paul, Birch, & Savage, 2017; Magarey et al., 2016; L. M. Wen et al., 2012). Children of parents participating in these interventions had higher vegetable intake and lower intake of sweet snacks at the end of the program (Cameron et al., 2014; Campbell et al., 2013; L. M. Wen et al., 2012). One study showed significant differences in the diets of formula fed children, being more likely to have high fruit and vegetable intake as opposed to low-variety or high energy-dense diets (Hohman et al., 2017). Longitudinal follow-up of one of these feeding practice interventions was able to confirm the positive long-term effects of increased fruit preference and frequency of fruit and vegetable intake in children at 5 years of age (Magarey et al., 2016).

Previous longitudinal child feeding interventions have resulted in improved weight outcomes in young children. Several randomized control trials were able effectively to improve child feeding practices though information delivered from infancy to toddlerhood, with information on techniques and recommended practices throughout these transitional periods (L A Daniels et al., 2012; Hohman et al., 2017; Savage, Birch, et al., 2016; L. M. Wen et al., 2012). Each study resulted in lower overweight status for children in the intervention group at 1 and 2 years of age. This supports the potential for effective child feeding interventions to decrease
obesity in young children. To the contrary, one randomized control trial did not result in improved child weight outcomes at the end of the intervention period (Bonuck, Avraham, Lo, Kahn, & Hyden, 2014). However, this trial began at 1 year of age and may have missed crucial developmental milestones during infancy that could have significant influences on weight outcomes. Only one of these trials had a long-term follow-up 3 years after the intervention was completed (L. A. Daniels et al., 2015). This follow-up did not find significant differences in weight status at 5 years of age, although the intervention group BMI z-scores continued to trend lower than the controls over time. Importantly, each intervention beginning during infancy was able to positively influence child feeding knowledge and practices implemented by parents. These longitudinal studies show supportive evidence of the use of optimal child feeding practices to promote healthy weight outcomes in young children.

2.4.1 Health Messaging

Health information in the form of messages that can be used in educational outreach efforts are one strategy and topic of interest when considering future intervention needs. Behavior change messages communicate to an audience essential information in a manner that encourages the adoption of that behavior (Health Communication Capacity Collaborative (HCCC), 2017). Optimal message content should be clear, accurate, and appealing while addressing the audience’s needs and considering their motivations, barriers, and aspirations. Nutrition messages directed towards parents are a specific method to promote parental behavior changes that can influence children’s diets and behavior (United States Department of Agriculture, 2017). It is critical for these messages to also be accurate and easy to read in order for a majority of parents to comprehend and implement the information (Houts, Doak, Doak, &
Loscalzo, 2006; Kirsch, Jungeblut, Jenkins, & Kolstad, 2002b; Safeer & Keenan, 2005; United States Department of Agriculture, 2017). Emotionally based messages focusing on the rewards and benefits of the targeted behaviors have been found to resonate with parents (Heinig et al., 2006; Russell et al., 2016; Rylatt & Cartwright, 2016; United States Department of Agriculture, 2017). Parents are seen to be more receptive to messages that emphasize the positive parent-child relationships, and nutrition and health outcomes associated with the promoted behaviors. Some specific message areas conceptually support behavioral changes in parents of preschool and school-aged children (United States Department of Agriculture, 2017). These include role modeling, family meals, division of feeding responsibility, healthy food availability and accessibility, and food beliefs and preferences. These core concepts have been used by governmental and professional agencies as a means of promoting behavior change in parents to improve nutrition and health initiatives for children.

Several studies have assessed the use of messaging to positively impact parental behaviors related to child feeding. A study assessing the differences in parental motivation to implement child feeding messages found that the phrasing, using either positive or negative wording, affected the parent’s response (Zahid & Reicks, 2018). Although all messages aimed to decrease the amount of sweetened beverages made available and provided to children for the same reasoning, the positively phrased messages stimulated higher motivation from parents to initiate behavior changes.

Another intervention compared the use of obesity prevention messages embedded within a general parenting program as compared to standard health educational materials for parents of preschool aged children (Haines et al., 2016). This use was considered a “stealth” messaging technique as opposed to direct message delivery. Although not statistically significant, weight
status trended lower in children within the intervention group at the end of the trial. Child behaviors, including activity levels and sweetened beverage consumption, also trended in the desired direction for the intervention group. Parental use of restrictive feeding practices was significantly decreased at the end of the intervention with the use of these embedded messages.

One intervention used health messages targeted towards parents of children from birth to 3 years of age in order to improve child feeding, healthy eating, and physical activity behaviors (Huxtable, Millar, Love, Bell, & Whelan, 2018). Some of the effective messages included breastfeeding, transition to solids, and healthy eating and drinks for toddlers which parents reported as being highly valued. Parents did struggle implementing messages about meal times and fussy eating, but these issues did not emerge until the end of the intervention, at around 3 years. Overall, parents reported few barriers to implementing the recommendations delivered via the health messages. Additionally, parents were seen to be generally receptive to the messages which were viewed as health-promoting, and parents reported wanting to do the best for their child.

Several randomized controlled trials aiming to improve child feeding practices have incorporated child feeding messages within the intervention program (L A Daniels et al., 2012; Fangupo et al., 2015; Spence et al., 2014a; L. M. Wen et al., 2012). These interventions were all effective at promoting behavior change in parents of children from birth to 2 years of age as seen by the decrease in obesogenic and increase in responsive feeding practices. Findings throughout the literature indicate that well designed child feeding and obesity prevention messages have the potential to promote behavior change as seen by the improved feeding practices utilized by parents.
2.4.2 Current Child Feeding Resources

Evidence-based child feeding messages and materials that are currently available are mainly geared towards health providers and professionals (American Academy of Pediatrics, 2009; R Pérez-Escamilla et al., 2017). These materials cover comprehensive feeding recommendations throughout infancy and toddlerhood, including breastmilk and bottle feeding, transitioning to solids, responding to infant cues, introducing food allergens, food acceptance and preferences, and family meals. However, these messages do not incorporate key concepts for effective use with parents. Despite the support for child feeding messages designed for parents and caregivers, there remains a lack of evidence-based child feeding messages. There is minimal and varying resources that address early feeding practices, and the available messages are often inconsistent (Dwyer et al., 2010; Rafael Pérez-Escamilla & Meyers, 2014). One particular challenge is due to no uniform federal dietary guidelines and corresponding feeding messages for children from birth to 2 years (Raiten et al., 2014). Without these uniform guidelines as a federally recognized reference, there is varying information being provided by professional organizations.

Professional organizations and leading authorities on health and nutrition often promote conflicting messages regarding child feeding practices. Current messages provide slightly differing recommendations on whether to introduce solids after 4 months, during 4 to 6 months or wait until 6 months of age (Academy of Nutrition and Dietetics, 2017; American Academy of Pediatrics, 2019; Centers for Disease Control and Prevention, 2018a; Gidding et al., 2005; Johnston, Landers, Noble, Szucs, & Viehmann, 2012). These messages promote different foods to introduce first, including iron-fortified rice cereal versus puree meat, or do not provide any specific suggestions for optimal first foods (Academy of Nutrition and Dietetics, 2017; American
Academy of Pediatrics, 2019; Centers for Disease Control and Prevention, 2018a; Gidding et al., 2005). Although these sources do have a consensus that cow’s milk should not be introduced prior to 12 months of age, the type of cow’s milk recommended differs between whole or 2% milk (Academy of Nutrition and Dietetics, 2017; Gidding et al., 2005). For introduction to juice, messages contradict if juice can be introduced at 6, 9, or 12 months of age (American Academy of Pediatrics, 2019; Centers for Disease Control and Prevention, 2018a; Gidding et al., 2005). In the midst of these conflicting messages, infants and toddlers continue to receive early introduction of solid foods, early supplementation with cow’s milk or reduced-fat milks, and have dietary intakes low in fruits, vegetables, and iron rich foods, but high in sweetened foods and beverages (Siega-Riz et al., 2010). These conflicting messages provided by reputable sources may contribute to the confusion of parents implementing child feeding practices for birth to 2-year-olds. Having a lack of clear messages that resonate with parents can lead parents to seek recommendations from less reputable sources (Huxtable et al., 2018; Russell et al., 2016; Savage, Neshteruk, Balantekin, & Birch, 2016). Addressing the need for comprehensive and consistent evidence-based child feeding messages and materials can improve parental knowledge, behaviors, and positive child health outcomes.
Chapter 3: A qualitative investigation of healthcare and education providers’ perceptions regarding parental implementation of optimal feeding practices to prevent obesity in children birth to 2 years

3.1 Introduction

Early childhood obesity is a growing concern in the United States with almost 1 in every 10 children from birth to 2 years old at a high weight-for-length percentile (Hales et al., 2017; Ogden et al., 2015). This childhood obesity epidemic increases the risk of adult obesity and weight-related health conditions throughout life, calling for the need of behavioral interventions during crucial early developmental years (National Institutes of Health & National Heart Lung and Blood Institute, 2017).

Children develop food preferences at early ages and these preferences are often maintained later in life (Patrick & Nicklas, 2005). Early exposure to new and healthful foods, particularly through repeated exposure and feeding techniques, can help improve dietary behaviors (Hoffmann et al., 2016; Kiefner-Burmeister et al., 2014; Patrick & Nicklas, 2005). Parental feeding styles and practices have been associated with children’s dietary intake and weight status (Kröller & Warschburger, 2008; Savage, Birch, et al., 2016; L. M. Wen et al., 2012).

Healthcare, community-based, and education providers can have significant positive or negative influences on parental child feeding practices (Hughes et al., 2007; Kim & Peterson, 2008; Matvienko-Sikar et al., 2018; Spiby et al., 2009). The purpose of this qualitative study was to determine misconceptions and barriers that prevent parents from implementing early
childhood obesity prevention practices as reported by healthcare, community-based, and education providers.

3.2 Methods

The study was approved by the University of Connecticut Institutional Review Board for Human Subjects. An information sheet was provided to all participants and once verbal consent was provided, they participated in a semi-structured phone interview with a trained researcher.

Participants

Participants for this study were purposefully recruited to include a variety of providers throughout the state of Connecticut. An initial list of healthcare and education providers was developed with the recommendations from an expert advisory committee. Criteria for participants included being an experienced healthcare or education provider, at least 18 years of age, able to speak and read English, and working with families with children between birth to 2 years of age. Participants were recruited in-person, via phone calls, or email. All participants contacted for an interview agreed.

Interview

The interview questions for this study were based on personal beliefs and behaviors grounded in the Theory of Planned Behavior and the interpersonal factors and dynamic interactions of the Social Cognitive Theory (Bandura, 1998). Interviews with participants were conducted by a trained researcher individually over the phone, audio recorded with permission, and scheduled for 60 minutes. Questions (Table 3.1) aimed to determine observed feeding and obesogenic
behaviors of families with young children, feeding, physical activity, and screen time recommendations used, barriers faced in implementing obesity prevention practices, current resource gaps in nutrition education, and dissemination methods of resources. Each provider received a small incentive valued at $10 for his or her time.

Data analysis

After the interviews were completed, the audio files were transcribed verbatim and verified by the researchers. Professional titles of providers instead of individual names were used to identify participants within transcripts. All interview questions addressing the research objectives were included in data analysis (Table 3.1). Each transcript was analyzed using an open-coding inductive analysis process (Thomas, 2006). Thematic analysis was then used by the study team, consisting of three members, to determine key emerging themes amongst the transcripts (Braun & Clarke, 2006; Tuckett, 2005). Question response themes were coded and summarized for frequency among interviews by each team member. Once all transcripts were analyzed, the study team convened to discuss common findings and confer major response themes. Multiple reviews were used at each stage of qualitative analysis to increase validity of the findings (Patton, 1999).

3.3 Results

The final sample for this study consisted of 14 providers, including early education providers (n=5), community-based providers (n=4), and healthcare providers (n=5). The final sample size was determined once representatives from a variety of professions and roles within the community were included and data saturation was reached based on no further new information provided during the interviews. Emerging themes were summarized for observed feeding
practices, barriers to childhood obesity prevention, and nutrition education resource gaps (Table 3.2).

**Observed Feeding Practices**

Overfeeding as it relates to improper portion sizes was one theme that emerged as an observed feeding practice in families with young children. One provider stated, “They overfeed their kids. They’re not aware of just how small the portion sizes are for kids especially zero to two.” (Lactation Consultant). A community education observed that, “Sometimes families think they should be getting a lot more than they actually need, so we actually have a large amount of kids that are actually on the higher end of weight.” (Early Head Start Education Manager).

Providers also reported that families are concerned about their child not receiving enough food, especially during birth to 2 years when their diet is transitioning. One provider explained, “[…]

*most commonly, I see overfeeding and parental anxiety about underfeeding. Even though most children are overfed, most parents are worried that they’re underfed,” (Pediatrician 1). Parents may experience anxiety and seek other sources to add calories and nutrition into their child’s diet as indicated by a WIC Nutrition Director, “When the children turn a year old, there’s a significant number of parents […] who are anxious about their child eating well, transitioning off of formula onto food, and so they want a supplemental beverage.”

Early initiation of solids and inappropriate techniques transitioning to solid food was also an emerging theme. One provider explained that “[…] there’s a misconception about when to give the solid foods or try them. I think a lot of them [parents] are doing it sooner then it’s really recommended.” “[…] some of the older [health professionals] are the ones that are encouraging them to start solids sooner than recommendation of around six months.” (Lactation Consultant).
This early initiation was observed as a disregard for current recommendations and was further described as part of a larger phenomenon. One provider explained that parents were “[...] giving cereal at an earlier age than we recommend because they don’t understand the anatomical needs for the baby to be able to take it safely.” (Pediatric APRN). This observation included not only a general lack of understanding by parents about when to initiate foods for their infant, but a desire to include the child in family meals. Another provider reported “[...] they like to try and feed their kids earlier than we would even recommend and not wait – you know how you’re supposed to wait like three days for every food introduced, so that way you see if there’s allergies.” This became an issue as the provider further explained instances where “you might have to stop all foods right now, because there’s something going on and because we’ve introduced so many things, we don’t know what it is,” (Early Head Start Education Director). Another inappropriate technique observed related to early initiation of solid food was introducing solid foods in a baby bottle. One provider described this practice by quoting a parent’s statement of, “‘Well, this is what my mom told me to do.’ Cereal in the bottle and the whole intention really is to knock the kid out and make sure they sleep through the night.” (Lactation Consultant).

Another feeding practice observed by providers, especially childcare directors, was the lack of autonomy and self-regulation for children ages birth to 2 years during mealtimes. One provider reported that “[...] one of the biggest challenges is parents are afraid to start little pieces of solid food because they’re afraid their children are going to choke and so we have a lot of challenges with encouraging families to start finger foods.” (Childcare Director 1). Another provider explained lack of autonomy during mealtime as “[...] it’s the parent’s worry of choking... and helping the parents to distinguish the difference between the child feeling out a new texture in their mouth and the child actually choking,” (Childcare Director 3).
The lack of autonomy and self-regulation was also seen with children who were simply not accustomed to feeding themselves. A provider explained that “The parents are always feeding them or they – and so you get these kids coming to us maybe even as toddlers who will have a plate full of food in front of them and they won’t pick it up and put it in their mouth themselves even though physically they’re able to pick up food and put it in their mouth,” (Childcare Director 1). Not only were parents feeding their child, but they opted to feed their child over letting their child attempt self-feeding. One provider stated, “So that’s one hard thing for some parents, because they’re – it’s easier, quicker, sometimes less messy to feed them themselves, rather than have the child feed themselves,” (Childcare Director 2). Another source of this feeding behavior was the fear of messy eating. A provider gave details on the response to one parent’s concern, “The other thing is like oh, they’re going to make a mess.” (Childcare Director 1).

The final emerging theme was that of unbalanced diets during the transition to solid foods. Providers observed that children during this transition period have too little produce, particularly vegetables, in their diet, and excess high energy-dense foods and added sugars. When asked about foods lacking in the diet during this time, providers clearly stated “Vegetables. [Their] vegetables and – yeah, vegetables, it’s mostly the children – especially the green vegetables.” (EFNEP Community Extension Educator). Although fruit was another concern, providers mentioned that it was the variety that was lacking in this case. One provider explained that it was often a financial barrier in regard to increasing fruit variety in the diet. This provider said “[...] if they buy bananas, they cannot buy apples. If they have the banana and apples, they cannot have the peaches and the plums [...]” (HHC Community Health Educator).
This lack of produce in the diet was not an isolated issue. A provider elaborated by saying “In general, [...] they don’t have much in the way of fruits and vegetables. They eat hugely excessive amounts of highly refined carbohydrates and foods that have added sugar [...],” (Pediatrician 2). Some specific examples included “Juice. Lots and lots of juice. And drinks that they perceive as juice like Kool-Aid, lemonade, iced tea. [...] They give too much junk food, take-out food, chicken fingers, macaroni and cheese, crackers,” (Pediatric APRN). There was further concern on sugar-sweetened products such as “Juice for sure. And sweet stuff. Not enough fruit, but getting their sweet stuff from other candy or cookies.” (Early Head Start Home Visitor). Another observation by providers was related to foods marketed to parents for children. A provider explained that “I think parents feel that they need to give their children special foods, baby foods, foods marketed to toddlers [...],” (Pediatric RD 1).

**Barriers to Following Childhood Obesity Prevention Recommendations**

Convenience, such as time and energy preparing food, appeared as one thematic barrier for parents to follow childhood obesity prevention recommendations. One provider explained that some parents do not follow recommendations because “In the morning sometimes is hard because they’ll do a run to [a fast food donut shop] and then – or they’ll grab something quick [...],” (Childcare Director 2). Besides saving on time, convenience also meant easier choices. Another provider described how parents make less optimal feeding choices simply to avoid conflict, stating, “I think it’s just easier. They say like their kids are crying and they want it, so they just give it to them,” (Early Head Start Education Manager). Providers also reported concern that the desire for convenient options led to relying on supplemental products, “I felt like the whole reason for the
toddler formula was just because again it was easier and it was putting this parent’s mind at ease [...],” (Childcare Director 1).

Another observed barrier was the marketing of less healthy or unnecessary foods for young children by social media and food companies. One provider described this occurrence, saying “Well, maybe it’s what they’re watching on TV or the advertising on TV.” (Lactation Consultant). This marketing presence had a clear impact on what parents provide for their children. Another provider observed that “They want to give [liquid nutrition supplement], or they want to give toddler formula, because advertising is out here,” (WIC Nutrition Director). The marketing not only influenced parents’ decisions, but created confusion. When asked where misconceptions on child feeding came from, a provider stated “I think the media is one thing and family and friends. [...] and of course now with the internet and chat rooms and all of this, it's a lot of electronic information,” (WIC Nutrition Director).

Cultural and familial related influences were another potential barrier to childhood obesity prevention and were a constant obstacle that many providers observed when working with parents. One provider cited an example related to mealtime barriers “[...]I think that there’s a lot of family input, extended family input so that can be a very hard barrier to break, those cultural norms,” (Pediatric RD 1). One specific example of cultural influences from the family was that “if there is an older family member, like, a grandmother who for cultural reasons believes otherwise and [...] this last year I had somebody from India, and she said in India they have a special ritual at five months old with the introduction of baby food. And that is their cultural norm and so I just said well, this is what we advise in the United States based upon the AAP recommendation,” (WIC Nutrition Director). Another example was provided when the provider further stated, “I think they just go on to the internet or talk with family and friends, and we do have a large Latino population
[...] and so the Latino culture has some beliefs, early introduction of baby food, putting cereal in the bottle has been one of them,” (WIC Nutrition Director).

All of these barriers were further exacerbated by the final emerging theme of the lack of knowledge and misconceptions of healthy foods. Providers believed that parents are genuinely concerned about their child receiving proper nutrition, but that parents do not understand what that entails exactly. One provider explained that “Most people are interested in nutrition. They want to feed their kids healthy foods. They just don’t necessarily know what is healthy and/or unhealthy,” (Pediatrician 1). On a simpler level, providers observed that some parents see all food as adequate sources of nourishment. This provider elaborated “[... for many parents, in a sense, all food is good including commercial food. And so there’s a trust in that and I think sometimes that trust is violated commercially,” (Pediatrician 2). Even for parents who may be able to differentiate between healthy and unhealthy foods, providers reported there are still misconceptions preventing parents from making healthier choices. The most common of these being that all healthy foods are too expensive to include in their diets. One provider expressed how frequently this issue came up by explaining, “We hear a lot that it’s expensive. It’s all on the outside of the store we all know. It’s easier to buy a box of hamburger helper. So, there’s a misconception too, eating healthy doesn’t have to cost you a lot of money,” (Lactation Consultant).

Nutrition Education Resource Gaps

Community-based and early education providers reported many resource gaps that prevent optimal nutrition education. One main concern was the lack of reputable, evidence-based materials that are accessible to the providers and parents they work with. One provider confirmed, “I think it would be great for us to have a suggested list of websites that would be considered really valid,
approved resources, recommended resources [...]” (Childcare Director 1). Many providers, particularly those working in community-based areas, expressed concerns with accessing these resources, “If I think it’s a good resource, I find it online and I think it’s a good resource, I’ll give it out. [...] Some of the stuff I really have to put together because I weed through it.” (Early Head Start Home Visitor).

In addition to reliable materials, community-based and early education providers were also lacking access to nutrition education resources that were sensitive to cultural and literacy differences, and engaging for parents. Providers reported serving families from a variety of cultural backgrounds, and this affected their diet and ability to understand educational materials. One provider explained the challenge “It's always been – especially because of the language. We don’t have anything in Spanish, so we have to – I have to do a lot of translation.” (EFNEP Community Extension Educator). There was also a lack of nutrition education resources that providers could use for low-literacy parents. A provider reported that “They do have some stuff that we can get out to families, but it’s a lot of reading and the demographic that we serve is lower income and a lot of our families can’t even read past eighth grade level,” (Early Head Start Education Manager).

Aside from these cultural and literacy needs, healthcare providers identified a lack of engaging resources that can be used with all parents. They also observed that parents did not learn best with current formats of nutrition education materials. Providers explained that parents needed more visual-based resources to capture their attention and help them understand the information: “I think that what would be most helpful for parents is things that are very visual. So I think we have a lot of information that’s written and I think that’s great, but a lot of the time parents aren’t interested in reading handouts or they’re just not that type of learner and so
seeing something that’s even more hands-on or a video or something that’s very visual for them is gonna [sic] be more beneficial,” (Pediatric RD 1).

In terms of specific topics that were lacking in current nutrition education materials, providers reported that parents needed more information about transitioning infants to solid foods. One provider explained, “So I think there's lack of education in that area to try [...] to have the baby and child to try – transfer from breastfeeding to regular, table food. I think there’s a lack of knowledge in that area,” (EFNEP Community Extension Educator). Another provider insisted “I would love to have the feeding for the babies on a monthly basis, let’s say after just four months, and up to five years old,” (HHC Community Health Educator). A provider explained that “[...] from infant to 2 years old, I also believe that we also need more educational materials [...] I have to do a lot of cut and paste because we don’t have a lot of resources. Again, we have some ages – from maybe first grade and up, but other than that we don't have a lot of resources in that area,” (EFNEP Community Extension Educator).

3.4 Discussion

The findings from this qualitative study identified a provider perspective on early child feeding practices of parents. Providers reported parental overfeeding of young children due to a lack of knowledge and misconception of healthy portion sizes and nutritional requirements for young children. Previous studies found that mothers from diverse populations primarily associated crying and distress with hunger (Gross et al., 2010; Redsell et al., 2010) and the belief that infants should finish the entire bottle at feeding times, increasing obesity risk (Gross et al., 2010; Redsell et al., 2010; Worobey, Peña, Ramos, & Espinosa, 2014). Parents also often serve inappropriate portions linked to increased energy intake (Jennifer O Fisher, Liu, Birch, & Rolls, 2007; Johnson et al., 2014).
Early introduction of solid foods by parents was also of concern to providers and associated with a lack of knowledge and cultural or familial influences. Previous research found that early introduction of complementary foods was associated with diets high in energy dense snacks and sweets and lower in fruits and vegetables (Grummer-Strawn, Scanlon, & Fein, 2008; Santos, Assunção, Matijasevich, Santos, & Barros, 2016). Additional studies have shown that early introduction of solid foods was positively associated with obesity outcomes at 3 and 6 years of age (Huh et al., 2011; Imai, Gunnarsdottir, Thorisdottir, Halldorsson, & Thorsdottir, 2014). In these studies, early introduction of solid foods was associated with lower maternal education and racial and ethnic differences, as black and Hispanic mothers were more likely to implement early introduction of solid foods (Elsie M. Taveras et al., 2013).

The lack of autonomy and self-regulation was associated with parents’ safety concerns and issue of time and convenience. Lower self-regulation is associated with lower parental control during feeding (Hughes & Frazier-Wood, 2016), increased weight status, and lower executive function related to eating in children (Hughes & Frazier-Wood, 2016; Posner & Rothbart, 2000). Providers reported parents concern about child’s safety and messiness during self-feeding. This may be due to limited knowledge and confidence on how to identify and react to choking hazards. There is also the possible lack of understanding for the greater benefits from self-feeding (Tan & Holub, 2011; Wehrly, Bonilla, Perez, & Liew, 2014). Time has been previously identified as a barrier to healthy feeding practices by parents (Martin-Biggers et al., 2015).

Although medical healthcare providers reported access to more reliable resources, early education and community-based providers reported limited access to evidence-based educational materials. Providers, especially in healthcare settings, indicated the need for more engaging,
culturally appropriate, visually appealing, interactive materials at appropriate literacy levels. Consequently, another study identified that low parent health literacy significantly increased the use of obesogenic child feeding practices (Yin et al., 2014). Providers also expressed the need for materials in Spanish and to include culturally appropriate foods and practices (Kreuter, Lukwago, Bucholtz, Clark, & Sanders-Thompson, 2003).

Overall, there is a need for evidence-based, engaging materials that address all transitions of early child feeding. Further research is needed to develop and evaluate the efficacy and effectiveness of such resources on early childhood obesity risk.
### Table 3.1. Interview questions with providers to determine perceived practices, barriers and educational opportunities to prevent early childhood obesity of children ages birth to 2 years old

<table>
<thead>
<tr>
<th>Research Objective</th>
<th>Interview Questions</th>
</tr>
</thead>
</table>
| To determine what feeding practices and obesogenic behaviors of families with 0-2 year olds are observed by providers. | • What are some issues that parents face regarding breastfeeding versus formula feeding?  
• What are some issues parents face with complementary foods?  
• What foods or food related practices do parents have the most trouble implementing? |
| To determine what barriers providers face when implementing early childhood obesity prevention practices with families of young children. | • What are some common misconceptions/confusion that parents have regarding feeding their baby/child?  
• If parents have mentioned misconceptions these to you, where do these misconceptions tend to come from?  
• What are the most common reasons why parents do not or are unable to follow the feeding advice or suggestions given?  
• What reasons do they give for not following it [suggestions for food/drinks parents should avoid giving their children]? |
| To determine what nutrition education resource gaps providers identify for use with families of 0-2 year olds. | • What other resources would be useful for you (as a provider or within your organization) to further educate parents about feeding their child? |
Table 3.2. Emerging qualitative research themes identified by providers regarding observed feeding practices of parents, barriers and educational opportunities for early childhood obesity prevention

<table>
<thead>
<tr>
<th>Research Topic</th>
<th>Emerging Themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observed Feeding Practices</td>
<td>• Overfeeding</td>
</tr>
<tr>
<td></td>
<td>• Early initiation of solids &amp; inappropriate techniques</td>
</tr>
<tr>
<td></td>
<td>• Lack of autonomy &amp; self-regulation</td>
</tr>
<tr>
<td></td>
<td>• Unbalanced diet (Limited vegetable intake, excess high energy-dense food intake)</td>
</tr>
<tr>
<td>Barriers to Childhood Obesity Prevention</td>
<td>• Convenience (time and energy for busy parents)</td>
</tr>
<tr>
<td></td>
<td>• Marketing from social media &amp; food companies</td>
</tr>
<tr>
<td></td>
<td>• Cultural &amp; familial influences</td>
</tr>
<tr>
<td></td>
<td>• Lack of knowledge &amp; misconception of healthy foods</td>
</tr>
<tr>
<td>Nutrition Education Resource Gaps</td>
<td>• Reputable, evidence-based &amp; accessible information</td>
</tr>
<tr>
<td></td>
<td>• Culturally/literacy sensitive materials &amp; engaging for parents</td>
</tr>
<tr>
<td></td>
<td>• Limited resources on transitioning to solid foods (month-specific)</td>
</tr>
</tbody>
</table>
Chapter 4: Parental Perceptions of Key Topics in Early Child Feeding Materials by Socioeconomic Status

4.1 Introduction

In 2011, about one in every 10 children under 2 years of age in the United States had a weight-for-length percentile classified as obese (Ogden et al., 2014; Pan et al., 2013) with even higher percentages seen in low-income and underserved populations. Childhood obesity has been a growing epidemic and public health concern over the past decade due to the short- and long-term consequences (Centers for Disease Control and Prevention, 2017; National Institutes of Health & National Heart Lung and Blood Institute, 2017). With the rising concerns regarding childhood obesity, better understanding of the causes at an early age are important for future prevention efforts.

Although children learn from their own experiences with food, external influences have a substantial impact on their food choices (Hoffmann et al., 2016; Kiefner-Burmeister et al., 2014; Patrick & Nicklas, 2005). Eating behaviors in children overall are affected largely by social determinants (Hoffmann et al., 2016; Kiefner-Burmeister et al., 2014; Wang et al., 2013). Parents influence their children’s eating behaviors through their own eating behaviors, attitudes and beliefs, and the implementation of actual feeding practices they utilize with their children (Hoffmann et al., 2016; R Pérez-Escamilla et al., 2017). Responsive feeding is a style of feeding practices that encourage children to eat autonomously in response to their physiological needs, encouraging self-regulation and supporting cognitive, emotional, and social development. Several recent studies have found correlations between responsive feeding practices and positive impacts on dietary patterns and weight outcomes, which may further decrease risk of obesity (L.
A. Daniels et al., 2015; Hohman et al., 2017; Savage, Birch, et al., 2016). To address early childhood obesity, parental feeding practices must be targeted as a means of changing child-eating behaviors at an early age. Recent guidelines on responsive parenting were developed for use by health professionals (R Pérez-Escamilla et al., 2017); however, there is still a need to address the learning needs of parents. The objective of this qualitative study was to determine the child feeding related topics that parents need to promote optimal early childhood eating behaviors. These findings will provide insight into the development of necessary educational materials on child feeding practices to improve healthy eating habits and for future early childhood obesity prevention efforts.

4.2 Methods

Study methods including interview questions were grounded in theory constructs of personal beliefs and behaviors within the Theory of Planned Behavior and the interpersonal factors and dynamic interactions of the Social Cognitive Theory (Ajzen, 1991; Bandura, 1998; Godin & Kok, 1996). The University of Connecticut Institutional Review Board approval for Human Subjects was secured prior to recruitment and data collection.

Participants

Participants were recruited from Expanded Food and Nutrition Education Program (EFNEP), Head Start, Women, Infants, and Children (WIC), health clinics, pediatrician offices and other community programs serving families with children ages birth to 2 years throughout Connecticut. Recruitment was conducted in person, via email, and using study flyers.
Inclusion criteria were: parent of at least one child between birth to 2 years old, at least 18 years of age, able to speak and read English or Spanish, and providing at least half of the feeding for their child. Purposeful recruitment was used to allow for comparison of parents by socioeconomic status and to include parents with child of differing ages between 0 and 2 years. Low-income was defined by a parent or family member’s participation or eligibility for an income dependent federal nutrition assistance or related program (e.g., WIC).

**Interviews**

Written informed consent was conducted with each participant and a demographic questionnaire form. Interviews were conducted individually in-person at a convenient site for the participants, audio-recorded with permission, and lasted about 60 minutes. The interview script included questions about feeding practices, sources of child feeding information, information received, beliefs about feeding practices, and how they make decisions about child feeding (Table 4.1). Each interview was conducted in either English or Spanish, based on the participant’s reported preference prior to the interview. Childcare was provided to families unable to make alternative arrangements. After completion of the interview, each parent received a $20 gift card for their time.

**Qualitative Analysis**

Study sample size was determined once data saturation was met and sufficient numbers of participants were recruited by varying income levels to allow for future comparison of responses. Audio-recorded interviews were transcribed verbatim. The interviews were analyzed to answer the following questions: (1) What foods or food related practices do you think you
should do but are hard to do?; (2) What would you like to learn more about as it relates to feeding your child/baby? Each transcript was open-coded and analyzed for themes using the classic analysis approach with the use of a qualitative software management program, NVivo Pro 11 (Thomas, 2006). Thematic analysis was then used to determine overarching themes on child feeding practices of interest amongst all participants, and subthemes were analyzed as stratified by socioeconomic groups (Braun & Clarke, 2006; Tuckett, 2005). Multiple reviewers were used at each stage of qualitative analysis to increase validity of the findings (Patton, 1999).

4.3 Results

Participants

Participants (n=66) were primarily female (91%), married (53%), employed full-time (53%), low-income (59%) and were not first-time parents (72%) (Table 4.2). Overall and subthemes of responses by parental income status along with sample quotes are included in Table 4.3.

Mealtime Preparation and Cooking Skills

Parents reported the need for more knowledge and skills in meal preparation for their young child. This included culinary skills such as preparing and cooking age appropriate and recommended whole entrées or meals by combining foods into a complete dish.

Low-income parents were interested in learning how to cook foods that their children would be more likely to eat. They also expressed a desire to learn how to prepare more meats and vegetables for their young child.

Non-low-income parents referred to mealtime preparation as an important way to avoid processed foods in the diet. One specific area of interest to non-low-income parents was learning
how to make homemade baby foods, which were referred to as healthier options. Many non-low-income parents also spoke about the need for information on how to make quick and easy toddler meals, which were referred to as being different from what other family members would eat.

*Dietary Intake Behaviors*

Another emerging theme was that of dietary intake behaviors. Parents wanted to understand more about meeting their child’s dietary needs and their own role in these dietary behaviors. Dietary intake behaviors included recommendations in dietary intake, changes in dietary patterns, and how they can impact and improve their child’s food intake.

Low-income parents expressed a concern of finding ways to get their child to increase overall food consumption. They wanted to learn strategies to get their child to eat more, finish their food, and consume more of specific food groups. In addition, low-income parents also reported the need to identify overfeeding and to better understand how much their child should actually be eating.

Non-low-income parents spoke more about transitionary stages in their child’s diet and introducing new foods and textures. They were mostly concerned about the timing and techniques used to transition from liquid to puree and eventually to solid foods. Non-low-income parents also reported that safety, such as choking hazards, was a specific area where they needed more information. This included knowledge on how to recognize and respond to signs of choking or other negative physiological responses to new foods that may harm their child.

*Affordability of Food*
Parents reported wanting more information about affordable foods, which was a common theme overall. Parents expressed concern with maintaining a budget and still supplying optimal food choices to their children. The types of foods parents wanted to learn how to fit into their budget differed based on socioeconomic status. Affordability concerns generally focused on healthy food options, but what parents mentioned as being their preferred healthy options differed.

Low-income parents reported wanting to incorporate more healthy foods into their child’s diet. Some examples provided included vegetables and high-protein food sources. When referring to healthy foods, they simply specified finding healthier versions or options in comparison to what their child was currently consuming.

Non-low-income parents also wanted to learn how to incorporate healthy foods into their child’s diet. When discussing healthy foods, they spoke mostly about natural and organic options. Non-low-income parents tended to refer to organic foods as being the healthier options to their child’s current diet. Fitting organic products into their food budget was seen as a goal that parents had trouble with due to cost demands.

Self-Feeding Guidelines for Young Children

Guidelines regarding self-feeding among young children was another emerging theme that parents desired. Parents were familiar with the concept of self-feeding, allowing their children to feed themselves, but stated that they needed to learn more about how and when to implement these types of practices. Although parents requested information on self-feeding, the aspects of self-feeding that they inquired about differed amongst socioeconomic groups.
Low-income parents reported needing information and direction on how to introduce different utensils for their child to use. They wanted to learn more about how to encourage their child to use spoons or other feeding tools to increase more advanced self-feeding techniques. Furthermore, they wanted to be sure that their child used the utensils properly for self-feeding as opposed to simply playing with them.

When discussing self-feeding, non-low-income parents were more concerned about how to prevent messes. They wanted to know how to encourage self-feeding without the negative outcomes they associated with messy eating. When referring to messy self-feeding, parents expressed concern for use of incorrect techniques and skills, or additional time and energy required by them after the meal.

*Food and Nutrition Knowledge*

The final emerging theme that parents reported on was food and ingredient knowledge about the foods they were feeding their young child. This included understanding what different foods were made of, not only the ingredients but other additives as well. Parents wanted more knowledge on what nutrients were found within foods to better understand how to increase variety and provide alternative options that still meet their child’s nutritional needs. In addition, parents explained that they wanted to know what else was found in foods that may unexpected, such as non-nutritive ingredients or substances.

Low-income parents were more interested in understanding which essential nutrients were found in different foods. They explained wanting to select the healthiest options and be able to substitute foods with other selections that would still provide important nutrients from what
was replaced. Some low-income parents were also concerned about identifying foods that are good sources of specific nutrients, such as protein or fiber.

Non-low-income parents were mostly concerned with food additives and substances that may not be expected or found on a food label. Many parents wanted more information on potential food allergens, including food items that may commonly illicit allergic reactions or may have an unexpected additive that could cause a reaction. Non-low-income parents also wanted more information about food additives, such as food dyes, preservatives, or other flavoring substances.

4.4 Discussion

This study identified five overall themes or educational gaps related to early child feeding needed by parents of children birth to 2 years old. Common themes were seen throughout the qualitative interviews, although some specific subthemes differed by socioeconomic status of the parents.

As it relates to mealtime preparation, low-income parents were more concerned about their culinary skills to prepare and cook specific foods. A previous qualitative study investigating low-income cooking practices found that parents were unable to identify any official training in culinary skills, reporting less confidence in preparing recipes or meals that they wanted to cook at home (Engler-Stringer, 2010). Low-income parents specifically described the desire to prepare more meats and vegetables. This corresponds to identified feeding goals in previous research where parents, including low-income groups, associated increasing vegetable intake as an important and healthy goal for their children (Beinert, Hernes, Haugen, & Øverby, 2017; Goulding et al., 2015; Hingle et al., 2012).
Non-low-income parents were not concerned about cooking skills, but were focused on the ability to prepare homemade baby foods. Although they referred to homemade baby foods as being healthier options, previous research shows no negative association with consuming commercially prepared baby foods and nutritional quality or fruit, vegetable, and micronutrient intake compared to homemade versions (Beinert et al., 2017; Reidy et al., 2018). They also wanted to be able to prepare easy toddler meals. The specification of easy meal preparation is consistent with a previous study which identified that primary barriers to non-low-income parents cooking at home were not related to confidence in cooking abilities, but rather an issue of convenience (Robson, Crosby, & Stark, 2016). Parents, particularly higher educated and employed women, perceived home-cooked meals to take more time, be inconvenient due to schedules, and overestimated costs of preparing foods at home.

Regarding food intake, parents wanted to learn more information about the role they play in affecting their child’s dietary intake patterns. For low-income parents, this centered on increasing how much their child would eat. A previous study assessing parental feeding practices in diverse populations found that household income was negatively associated with pressure to eat as a controlling feeding practice (Wehrly et al., 2014). This suggests that low-income parents may pressure their child to eat more than their non-low-income counterparts. Simultaneously, low-income parents also expressed concern in being able to identify overfeeding. This topic may have arisen from a desire to prevent their child from developing obesity. A qualitative study identifying feeding goals of low-income parents found that preventing obesity was reported as a specific goal by the majority of mothers (Goulding et al., 2015). Obesity prevention was prioritized despite the disregard for goals involving feeding practices directly affecting obesity risks, including smaller portions and satiety recognition. These previous findings align with the
findings within this study, where low-income parents report obesity prevention being an
important topic, but still having a conflicting desire to increase children’s intake.

Non-low-income parents were more concerned about food intake during transitionary
periods, when they should introduce their child to new foods and textures. The need for
information and education on timing and techniques for transitioning to new foods may be a
result of the current lack in federal dietary guidelines with corresponding feeding messages for
infants and toddlers (Raiten et al., 2014). Although there are currently global recommendations
set by the World Health Organization, these recommendations are also not commonly followed
in other industrialized countries (Foote & Marriott, 2003; World Health Organization (WHO),
2018). Another concern for non-low-income parents related to introducing new foods was the
fear of choking. One study conducted in a non-low-income population in France also found that
the majority of parents reported a fear of their child choking when introducing new food textures
(Marduel Boulanger & Vernet, 2018). Even after introducing textures for the first time, fear of
choking was a continuing concern for some parents.

Affordability of food was a topic of interest for parents of varying income levels. A
previous qualitative study identified cost as being a commonly reported barrier to healthy
feeding practices for parents of preschool aged children (Martin-Biggers et al., 2015). Within this
study, low-income parents were mostly concerned about affording healthier options from what
they currently provided, particularly vegetables and protein sources. This focuses once again on
the common concern for providing healthier food groups and the desire to incorporate more
vegetables into their child’s diet while maintaining a feasible budget (Engler-Stringer, 2010;
Goulding et al., 2015; Hingle et al., 2012).
For non-low-income parents, their definition of healthier food options involved mainly organic and natural foods. Despite previous research showing limited nutritional benefits to consuming organic and naturally grown foods compared to commercially grown products (Bourn & Prescott, 2002; Magkos, Arvaniti, & Zampelas, 2003), parents may still perceive these foods to be more healthful for other varieties of reasons.

Self-feeding has been identified as an important practice in the development of motor skills and abilities, as well as the increase in autonomy and self-regulation of children’s intake (Dwyer et al., 2010; R Pérez-Escamilla et al., 2017; van den Engel-Hoek, van Hulst, van Gerven, van Haften, & de Groot, 2014). Low-income parents were more focused on the motor skills, or their child being able to use utensils such as spoons. Spoon-feeding has been referred to as a more complex feeding skill, of which children need time to develop in sequence (van den Engel-Hoek et al., 2014). In addition, a previous study has shown that the time and age at which a healthy child develops these motor skills may vary greatly (B. Carruth & Skinner, 2002).

Non-low-income parents were more concerned about the mess associated with their children self-feeding. Previous research has shown that children who began self-feeding at earlier ages did not show any decrease in nutrient or energy intake compared to those who were fed by a caregiver, despite the difference in motor skill level (B. R. Carruth, Ziegler, Gordon, & Hendricks, 2004). The other major concern for non-low-income parents involved the negative association of time and energy with the mess related to self-feeding. Again, this may be associated with the importance of time and convenience aspects of meals for non-low-income parents (Bava, Jaeger, & Park, 2008; Martin-Biggers et al., 2015).

Parents also wanted more information on food ingredients and knowledge to better identify foods that would provide optimal nutrition to their child and prevent adverse allergic or
health consequences. For low-income parents, this was mainly centered around identifying which foods were more wholesome for their child and would provide them with the amounts of each nutrient they needed. A previous study in low-income parents identified several common feeding behaviors and beliefs, one of which was to introduce their children to more wholesome, nutrient-rich foods (Russell et al., 2016). Despite this belief, it was found that these low-income parents were still more likely to feed for non-nutritive purposes, such as providing any food possible to satisfy or calm their child.

Non-low-income parents were more concerned about food additives and allergens that are present in the foods they provide their child. Some of these concerns and confusion may be a result of recently changing recommendations on allergen-containing food introduction at younger ages (Meyer, 2009; Togias et al., 2017; Turner & Campbell, 2017). In regards to other additives, a previous study found that non-low-income parents report concerns over unhealthy food additives in baby and toddler foods, including preservatives and flavorings such as sodium and sugars (John et al., 2016). Content analysis studies have found that these concerns on food additives may be valid for some pre-packaged baby desserts and toddler meals, but not all baby and toddler foods on the market (Cogswell, Gunn, Yuan, Park, & Merritt, 2015; Elliott & Conlon, 2015).

Although all participants lived within the same state, there was representation from a variety of areas including urban, suburban, and rural communities. The study population also consisted primarily of mothers. This was likely due to the inclusion criteria that only one parent, providing at least half of the child feeding, could participate. In many cases the mother figure provided the majority of the child feeding, which resulted in few male participants. Despite these
limitations, this study had a socioeconomically diverse and saturated sample within the targeted state.

4.5 Conclusion

Common themes were found across socioeconomic groups, suggesting effective child feeding topic materials can be developed for use in socioeconomically diverse settings. However, materials should include details that address specific learning needs identified as subthemes for each income level. Although recently developed feeding guidelines (R Pérez-Escamilla et al., 2017) can serve as a basis for this material development, addressing additional subthemes that were concerning to parents such as step-by-step transitioning from liquid to solid diet, identifying potential food allergens, promoting the development of self-feeding skills, utilizing affordable healthy foods, food preparation techniques, and creating balanced meals can further improve its effectiveness. The study results indicate that further material development and research would be warranted to provide parents from diverse socioeconomic backgrounds with child feeding messages that could impact practices and behaviors and prevent the onset of early childhood obesity.
**Table 4.1. Interview Script**

<table>
<thead>
<tr>
<th>Interview Question</th>
<th>Structured Prompts</th>
</tr>
</thead>
<tbody>
<tr>
<td>How many children do you have and what are their ages?</td>
<td>• What are their ages in years and months?</td>
</tr>
<tr>
<td>Who helps take care of your child/baby?</td>
<td>• Inside or outside the home?</td>
</tr>
<tr>
<td>What is your favorite thing to do with your child/baby?</td>
<td></td>
</tr>
<tr>
<td>What is mealt ime typically like with your child/baby?</td>
<td>• Where is the meal?</td>
</tr>
<tr>
<td></td>
<td>• Who does the feeding?</td>
</tr>
<tr>
<td></td>
<td>• Who else is there?</td>
</tr>
<tr>
<td></td>
<td>• How long does it last?</td>
</tr>
<tr>
<td></td>
<td>• Scheduled or on demand?</td>
</tr>
<tr>
<td></td>
<td>• Any TV or music on?</td>
</tr>
<tr>
<td>How do you decide when to feed your child?</td>
<td></td>
</tr>
<tr>
<td>How do you decide what foods and beverages to feed your child?</td>
<td></td>
</tr>
<tr>
<td>How do you decide how much to feed your child?</td>
<td></td>
</tr>
<tr>
<td>Do you currently or did you ever breastfeed your child?</td>
<td>• How did you decide whether or not to breastfeed?</td>
</tr>
<tr>
<td></td>
<td>• [If no]: If you didn’t breastfeed, what were some of the reasons why you didn’t?</td>
</tr>
<tr>
<td></td>
<td>• If you did breastfeed, how long did you breastfeed?</td>
</tr>
<tr>
<td></td>
<td>• What helped you with breastfeeding? What reasons if any, made it difficult to</td>
</tr>
<tr>
<td></td>
<td>breastfeed or breastfeed longer?</td>
</tr>
<tr>
<td></td>
<td>• Did your child receive any formula even when you were breastfeeding? How old</td>
</tr>
<tr>
<td></td>
<td>were they? How often did they receive it? Why?</td>
</tr>
<tr>
<td>How old was your child when you first fed him/her something other than formula or</td>
<td>• What did you feed them first and why?</td>
</tr>
<tr>
<td>breastmilk?</td>
<td>• Does your child currently drink cow’s milk? If yes, how old were they when you</td>
</tr>
<tr>
<td></td>
<td>first gave them cow’s milk? What type of cow’s milk did you first give them and</td>
</tr>
<tr>
<td></td>
<td>why? Is that different from now?</td>
</tr>
<tr>
<td></td>
<td>• If no cow’s milk, why not? Are they receiving any other type of milk? If yes,</td>
</tr>
<tr>
<td></td>
<td>what kind?</td>
</tr>
<tr>
<td>What are your child’s favorite foods and drinks?</td>
<td></td>
</tr>
<tr>
<td>What foods will your child not eat?</td>
<td></td>
</tr>
<tr>
<td>Question</td>
<td>Response</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Are there foods or drinks that you don’t give your child?</td>
<td>At what age &amp; why?</td>
</tr>
<tr>
<td>What other people or places influence what or how much your child eats or drinks?</td>
<td>Please give examples of anything that is helpful in feeding your child and, anything that is not helpful</td>
</tr>
<tr>
<td>What foods or food related practices do you think you should do but are hard to do?</td>
<td>Learning by talking with someone, doing what your family did, watching other people, or classes</td>
</tr>
<tr>
<td>Where did you learn about how to feed your child/baby?</td>
<td>Learning by talking with someone, doing what your family did, watching other people, or classes</td>
</tr>
<tr>
<td></td>
<td>What specific people helped you learn more about feeding children?</td>
</tr>
<tr>
<td></td>
<td>Who/Which were best for you? Why?</td>
</tr>
<tr>
<td></td>
<td>Who/Which talked to you but their advice wasn’t helpful? Why?</td>
</tr>
<tr>
<td></td>
<td>What websites or apps have been helpful to you related to child feeding?</td>
</tr>
<tr>
<td>What tips would you give to other parents about feeding their child?</td>
<td>What is watched?</td>
</tr>
<tr>
<td>How often does your child watch something on a screen such as TV, DVD/movie, computer, tablet or other?</td>
<td>How long?</td>
</tr>
<tr>
<td>How often does your child play outside of a high chair, stroller or other item that would keep them strapped in?</td>
<td>How often?</td>
</tr>
<tr>
<td></td>
<td>How long?</td>
</tr>
<tr>
<td></td>
<td>Where?</td>
</tr>
<tr>
<td></td>
<td>With parent, other people who play with child?</td>
</tr>
<tr>
<td>What would you like to learn more about as it relates to feeding your child/baby?</td>
<td>Internet, ask doctor, ask mother/sister, app?</td>
</tr>
<tr>
<td>How would you like learn more about how to feed your child/baby?</td>
<td>Internet, doctor, family member, friend, other?</td>
</tr>
<tr>
<td>If you had a specific question about how to feed your child/baby, how would you like to get it answered?</td>
<td>Internet, ask doctor, ask mother/sister, app?</td>
</tr>
<tr>
<td>Who do you trust the most for info about child feeding?</td>
<td>Internet, doctor, family member, friend, other?</td>
</tr>
<tr>
<td>The purpose of this interview was to help us figure out what information parents/caregivers of babies and toddlers would like to learn about child feeding and how we could help them get it. Is there something else you think we should know?</td>
<td>Interview questions used in qualitative analysis</td>
</tr>
</tbody>
</table>
Table 4.2. Participant Demographics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Mean ± SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>31.2 ± 6.5</td>
</tr>
</tbody>
</table>

**Gender**
- Male: 6 (9.1)
- Female: 60 (91.9)

**Race**
- White: 43 (65.2)
- Black: 8 (12.1)
- Other: 15 (22.7)

**Ethnicity**
- Non-Hispanic: 49 (74.2)
- Hispanic: 17 (25.8)

**Education Level**
- Some College or Higher: 34 (51.5)
- Less than College Degree: 32 (48.5)

**Marital Status**
- Single, Never Married: 20 (31.3)
- Living with Partner: 8 (12.5)
- Married: 34 (53.1)
- Divorced: 2 (3.1)

**Number of Children**
- 1: 25 (37.9)
- 2: 28 (42.4)
- 3+: 13 (19.7)

**Age of Child**
- 0-6 months: 11 (16.7)
- >6-12 months: 22 (33.3)
- >12-24 months: 33 (50.0)

**Income Status**
- Low Income: 39 (59.1)
- Non-Low Income: 27 (40.9)

**Primary Language**
- English: 54 (81.8)
- Spanish: 12 (18.2)
Table 4.3. Thematic Results of Parent Requested Educational Topics Regarding Child Early Feeding Stratified by Income Level

<table>
<thead>
<tr>
<th>Theme</th>
<th>Subthemes by Income</th>
<th>Sample Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mealtime preparation</td>
<td>Low-Income Parents</td>
<td>“It’s not like I don’t eat meat. It’s just that it’s expensive and I don’t know how to cook it very well. So we don’t […]”</td>
</tr>
<tr>
<td></td>
<td>Preparation &amp; cooking skills</td>
<td>“I would like to know several ways to prepare vegetables so they can eat.”</td>
</tr>
<tr>
<td></td>
<td>Non-Low-Income Parents</td>
<td>“I wish that I had known a better way to try and make your own baby food.”</td>
</tr>
<tr>
<td></td>
<td>Baby/toddler foods</td>
<td>“Easy toddler meals or that type of thing. Just to get a little more variety in, and change things up a little bit.”</td>
</tr>
<tr>
<td>Food Intake</td>
<td>Low-Income Parents</td>
<td>“Like find ways to get your kids to eat a little bit more.”</td>
</tr>
<tr>
<td></td>
<td>Increasing overall intake; Identifying overfeeding</td>
<td>“The quantity... what is considered a full meal, what is too much.”</td>
</tr>
<tr>
<td></td>
<td>Non-Low-Income Parents</td>
<td>“It’s really challenging introducing him to food, and I’m so afraid of choking […] I feel like I’m not as daring as I should be.”</td>
</tr>
<tr>
<td></td>
<td>Choking hazards; Transition to solids</td>
<td>“But for solid foods, I wish there was more in terms of transitioning and what is the best time to transition.”</td>
</tr>
<tr>
<td>Affordability</td>
<td>Low-Income Parents</td>
<td>“I mean I do find it difficult to buy healthier food because it’s expensive.”</td>
</tr>
<tr>
<td><strong>Non-Low-Income Parents</strong></td>
<td>Affordable organic options</td>
<td>“I would love to do even more organic, it’s just too costly. We don’t buy organic milk, just because my husband can’t stand us paying […]”</td>
</tr>
<tr>
<td>---------------------------</td>
<td>-----------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| **Low-Income Parents**    | Self-feed with utensils      | “Introducing, let them use a spoon.”
“She plays with the silverware but she hasn’t used it.” |
|                           |                              | “Yeah. I hate feeding her purees, because after that it was a bath time and a change of outfit.” |
| **Non-Low-Income Parents**| Self-feed without mess       | “Um, more healthier stuff. Like, what’s healthier to feed kids.”
“If like the meats, you know red meats and stuff like that, what’s the best for them and what’s like the least best for them.”
“I guess more varieties […] Like a wider variety of options to, because that’s like, it’s hard to find food that a two year old can eat that’s healthy, that’s different.” |
| **Low-Income Parents**    | Healthier food variety       | “It would be really nice if there was better information about allergies.”
“Foods that don’t have hormones and steroids because I’m particularly concerned about that.”
“I don’t know if he should just be eating healthy, healthy food. I hate […] giving him processed food, […] things that have all that additive.” |
| **Non-Low-Income Parents**| Food allergens and additives  |                                                                                                                                |
Chapter 5: The Development and Testing of a Set of Child Feeding and Obesity Prevention Messages

5.1 Introduction

To address the growing issue of early childhood obesity, it is essential to provide parents and caregivers with consistent and evidence-based child feeding guidance that includes information for developmental milestones within the birth to 2-year age range as provided in a recent report (Rafael Pérez-Escamilla & Meyers, 2014). Child feeding and obesity prevention messages have the potential to alter feeding practices utilized by parents during the crucial young ages at which children develop their food preferences and eating habits. Several randomized controlled trials have found the use of child feeding guidance within interventions to effectively promote optimal feeding practices for parents of children birth to 2 years old (L. A. Daniels et al., 2012; Fangupo et al., 2015; Spence, Campbell, Crawford, McNaughton, & Hesketh, 2014b; L. M. Wen et al., 2012). Additional longitudinal studies have shown that interventions improve child feeding practices and were associated with positive impacts on dietary patterns and weight outcomes (L. A. Daniels et al., 2015; Hohman et al., 2017; Savage, Birch, et al., 2016). However, there remains a lack of current, comprehensive, evidence-based feeding and related obesity guidance available to parents and caregivers of children birth to 2 years old.

Responsive feeding practices have been deemed as a key dimension of early childhood obesity prevention (R Pérez-Escamilla et al., 2017). Responsive feeding promotes self-regulation and cognitive, emotional, and social development in young children which can improve dietary behaviors and support healthy weight outcomes (Black & Aboud, 2011; R Pérez-Escamilla et al., 2017). These practices are grounded in three steps where the child first signals hunger or satiety,
through a combination of facial expressions, actions such as fist clenching or rooting, and vocalizations; the caregiver then recognizes the cues and responds promptly and appropriately based on the child’s developmental stage and cue provided; and once the child experiences a predictable response, they can maintain improved recognition over their own physiological signals. These practices encourage caregivers to only feed for hunger as opposed to comfort, avoid overfeeding which is common with bottle propping for infants or prompting for toddlers, and allow children to self-feed where they can stop eating once they reach satiety. Responsive feeding practices improve self-regulation which allows children to better control their dietary intake by focusing on their physiological needs and increasing self-control, will power, delay of gratification, and emotional regulation (L L Birch & Davison, 2001; R Pérez-Escamilla et al., 2017).

Previous exploratory studies have found that parents require culturally appropriate educational materials that address the transitionary diet from birth to 2 years, with specific information on diet progression, meal planning, and potential food allergies or concerns (R. Heller, Chiero, & Mobley, 2018; Rebecca Heller, Chiero, Trout, & Mobley, 2017). Parents may be more likely to adopt information that focuses on child health benefits, positive parent-child relationships, child individuality, and consequences to specific actions (Heinig et al., 2006; Russell et al., 2016; Rylatt & Cartwright, 2016). To increase engagement and understanding, educational materials should be written at or below the sixth-grade reading level and include text-related images (Houts et al., 2006; Kirsch, Jungeblut, Jenkins, & Kolstad, 2002a; Safeer & Keenan, 2005).

The purpose of this study was to develop a comprehensive set of child feeding and obesity prevention messages that can be implemented into educational outreach materials for
parents of children birth to 2 years of age that are caregiver-focused, culturally appropriate, at appropriate literacy levels, available in English and Spanish, and evidence-based. Further, materials were evaluated for comprehension, perceived relevance, and feasibility.

5.2 Methods

Project methodology was based on previous protocols for developing universal core nutrition and related messages for families with young children as conducted by the United States Department of Agriculture’s Food and Nutrition Service (United States Department of Agriculture, 2017). This protocol consisted of an iterative multi-phase qualitative testing and evaluation process to determine the wording and tone, format, and specific information that should be included in the messages as reported by the target population. A conceptual framework of message development was based on social and behavior change communication programs by the Health Communication Capacity Collaborative (Health Communication Capacity Collaborative (HCCC), 2017). This seven-phase framework included gathering background data, building a team of specialists, collaborating to develop message topics, reviewing previous research, determining key message content, drafting messages, and pretesting to finalize messages. This conceptual model served as the basis for development of the messages and the interview questions to test these messages. The University of Connecticut-Storrs Institutional Review Board for Human Subjects deemed the project exempt and verbal consent was obtained prior to data collection. An information sheet was provided to all participants at the time of data collection.
Message Development

A core set of 12 messages, with one containing 2 sub-messages, and supporting materials were developed for parents of children birth to 2 years old based on previous research findings, current research evidence, and revision of current messages available in childhood obesity prevention outreach (Figure 5.1). According to previous formative research with families of young children participating in federal food assistance programs, nutrition materials should be accurate, easy-to-read and emotionally based (United States Department of Agriculture, 2017). Message topics were developed and mapped to responsive feeding practices, which have been deemed as a key dimension of early childhood obesity prevention (R Pérez-Escamilla et al., 2017) (Table 5.1). The messages were reviewed by experts (n=12) in the field of early childhood obesity prevention to provide feedback on improving comprehension, appearance, and relevance prior to message testing. Cultural appropriateness and literacy level were also considered so the messages would be appropriate for diverse populations. Photographs and graphics were relatable to the target audience by including parent and child images with diverse backgrounds. Materials were translated and culturally adapted for use in Spanish as well, by incorporating culturally appropriate language, food items, and photographs (Figure 5.2). The Spanish materials were also reviewed separately by native Spanish speakers (n=4) from a variety of nationalities to ensure the comprehension and appropriateness of the translated versions. After providing their written feedback, these reviewers were each given a $10 gift card for their time.

Data Collection

Participants were recruited from Expanded Food and Nutrition Education Program (EFNEP), Head Start, Women, Infants, and Children (WIC), health clinics, pediatrician offices
and other community programs serving families with children birth to 2 years of age throughout Connecticut. Recruitment was conducted in person, via email, and using study flyers. Inclusion criteria for participants was being a parent of at least one child between birth to 2 years old, at least 18 years of age, able to speak and read English, and providing at least half of the feeding for their child. Only one parent per child was invited to participate in the study. Each parent received a $20 gift card after the interview as a thank you for their time.

After providing verbal consent, parents of children birth to 2 years old were individually interviewed by a trained researcher in-person to test the core set of childhood obesity prevention messages to determine overall comprehension of material elements (words, pictures etc.), credibility, identification with messages, perceived target audience, relevance, feasibility, ideas for improvement and, likelihood of message exposure. Each semi-structured interview lasted about 60 minutes and parent feedback was recorded by a notetaker during the interview process. The interviews consisted of open-ended questions to collect qualitative data on message comprehension and 10-point Likert scale questions to collect quantitative data assessing relevance and feasibility. Initial feedback from the first set of interviews were used to revise materials.

A second set of semi-structured interviews with parents of children ages birth to 2 years were conducted to further test and finalize the revised materials. These interviews were conducted in the same manner as the first set of interviews, but utilized the revised materials. This iterative process was more likely to produce effective materials (Snyder, 2007). This resulted in a final sample size when data saturation was reached.
Qualitative Analysis

Once the interviews were completed, the transcript notes were analyzed to answer the following qualitative research questions: (1) What do you think this message is telling you to do?; (2) What words or sentences are difficult to read or understand? Each transcript was analyzed using an open-coding inductive analysis process (Thomas, 2006). Thematic analysis was then used to determine key emerging themes amongst the transcripts for each message (Braun & Clarke, 2006; Tuckett, 2005). Multiple reviewers were used at each stage of qualitative analysis to increase validity of the findings (Patton, 1999).

Statistical Analysis

The remaining quantitative questions were analyzed using IBM SPSS Statistics Version 24. The research questions included: (1) How important is this message to you? (1 being very important; 10 being least important); (2) How much do you believe this message? (1 being most believable, 10 being least believable); (3) How easy or hard is this message to do? (1 being easiest, 10 being hardest); (4) How likely would you be to use the message if it applied to your child? (1 being very likely, 10 being very unlikely). Descriptive statistics were conducted on the quantitative questions for all responses on the 10-point Likert scale questions for each message, with possible scores ranging from 1 to 10.

5.3 Results

Demographics
The final sample (n=23) was primarily female (82.6%), Non-Hispanic White (52.2%), non-low-income (52.2%), with a mean age of 33.3 ± 6.8 years, and had at least a Bachelor’s degree (60.9%) (Table 5.2).

**Feeding and Obesity Prevention Message Testing**

For all the messages tested, most parents reported they were not difficult to understand and did not include any confusing words or phrases. These findings were consistent with parents being able to comprehend and report on what the message was telling them to do. For each message, parents were able to identify the main theme or themes of the message correctly (Table 5.3).

**Message 1: Breastmilk and Formula Feeding**

Parents found the breastmilk and formula feeding message at the high to the highest level of perceived importance (1.57 ± 0.99), very to the most believable information in the message (1.61 ± 1.50), very easy to the easiest level of difficulty to implement with their child (1.74 ± 1.84), very likely to the most likely to use with their child (1.09 ± 0.29) (Table 5.3).

Almost every parent identified the theme of feeding their child breastmilk and formula during the first 6 months of age (Table 5.3). Parents expressed this understanding by stating that the message informed them, “For the first 6 months of life, to stick to just breast milk or formula,” (A002) and to “Only put breastmilk or formula in a bottle,” (B003).

Another main theme identified by parents was behaviors to avoid during bottle feeding (Table 5.3). This theme included substances that should not be added to bottles during feedings, which one parent explained as, “There should not be water, juice, or solid foods inside of a
bottle,” (B007). The theme also included bottle-feeding practices that should be avoided, such as, “Don’t leave your child unattended with a bottle in the mouth. The baby can’t sleep with the bottle,” (A104).

**Message 2: Starting Solids**

The starting solids message was seen by parents as having moderate to high level of importance (2.23 ± 1.72), moderately to very believable information within the message (2.35 ± 1.99), moderately to very easy to implement with their child (2.20 ± 1.53), and moderately to very likely to use with their child (2.57 ± 2.68) (Table 5.4).

One main theme identified by parents focused on timing for first solids, including how to identify when your child was ready and around which age this generally occurs (Table 5.3). One parent who recognized this theme explained that, “It gives you a good guide to determine when your baby will be ready for solid foods,” (B108). Another parent stated in more detail that, “Between 4-6 months, it’s ok to start feeding your child solids. There are some developmental steps that the baby must be at before it is safe to start solids,” (B007).

The other main theme was properly reported as techniques on first foods (Table 5.3). This more specifically described how and what to introduce as first foods. This was identified by parents as they stated the message was, “[…] basically telling how much is needed, how much is required,” (A102) and, “[…] what to give […] and what to offer them,” (B006).

**Message 3: Complementary Feeding**

Parents reported the complementary feeding message to have high to the highest level of importance (1.70 ± 1.50), moderately to very believable information within the message (2.04 ±
The first theme identified focused on the next stage in transitioning to solids, including the timing and appropriate progression of solid foods in the child’s diet (Table 5.3). One parent described it as the, “Next step after you introduce solids: what you need to do going forward to feed your 6- to 12-month-old,” (A401). Another parent saw it more specifically as an advancement in the solid food diet, stating, “Once you’re gotten to this stage, you can move more towards more solid foods,” (A002).

The other main theme parents recognized was that of healthy foods and amounts to provide the child (Table 5.3). One parent stated that this complementary feeding message, “It’s showing you how to progress through giving your baby solids,” (B500). Other parents were primarily focused on the portions and specific amounts saying, “It’s about how much food to give your baby as they get older. As they age, the amount that you give them will change,” (B108).

**Message 4: Foods to Avoid Before 1 Year**

The foods to avoid before 1 year message was found by parents to have high to the highest level of perceived importance (1.61 ± 2.02), very to the most believable information in the message (1.45 ± 1.34), be very easy to easiest level of difficulty to implement with their child (1.99 ± 1.95), and very likely to most likely to use with their child (1.30 ± 1.26) (Table 5.4).

Most parents accurately described this message theme as informing them on what foods to avoid (Table 5.3). Some parents explained it very simply, such as one parent who stated that the message told them, “What not to feed your baby,” (B003). Other parents viewed it as a more
specific cautionary message, which is seen in one parent’s quote that, “It’s a warning of the things you shouldn’t give your infant before he/she turns one,” (A106).

Some parents identified another related theme focused on safety concerns (Table 5.3). Parents who reported this as the purpose of the message explained its focus on, “the safety concerns behind the drinks and milks and honey for a certain age, 0-12 months,” (B202). Some parents specified the reasoning behind the safety concerns. For example, one parent stated it was, “To avoid certain foods because they have a choking risk,” (A402).

**Message 5: Food Variety**

Parents found the food variety message to be high to the highest level of perceived importance (1.70 ± 1.15), have very to most believable information in the message (1.91 ± 1.41), be moderately to very easy level of difficulty to implement with their child (2.28 ± 1.68), and be very likely to most likely to use with their child (1.89 ± 1.68) (Table 5.4).

The first main theme parents found within this message is that of incorporating a variety of foods into the child’s diet (Table 5.3). Many stated this directly, including one parent who explained that the message is telling them to, “Basically, give your baby a variety of different foods,” (A102). Other parents were able to identify more specifically that, “[…] it’s telling me that it’s important to introduce different types of food from different food groups,” (B006) such as, “Encouraging your kids to eat vegetables, fruits, and meats,” (A402).

The other main theme that parents reported was that of introducing new textures into their child’s diet (Table 5.3). Parents were able to identify that the message was explaining the progression of textured foods their child can have. One parent explained that, “It’s telling you how to move from purees to finger foods and when you can do that. It shows you how to grow
with your child as they age,” (A404). In addition to the stages of textured foods, parents also recognized that the message was, “Discussing ways to prepare foods and the different textures the food can be prepared in,” (A401).

Message 6: Offering New Foods

Parents reported the offering new foods message to have high to the highest level of perceived importance (1.65 ± 1.07), very to most believable information in the message (1.35 ± 0.93), be moderately to very easy level of difficulty to implement with their child (2.89 ± 2.57), and be very likely to most likely to use with their child (1.96 ± 1.26) (Table 5.4).

The main theme of the message that parents interpreted was that it told them to have patience and persistence when offering new foods to their child (Table 5.3). One parent explained that the message was telling them, “Don’t get frustrated and be patient. Try to offer new foods more than just a few times,” (A106). Parents were also able to elaborate on the need to be persistent. In one quote a parent explains that the message tells them, “To keep trying to feed the baby even if they don’t like the new food. If they don’t like it first, it doesn’t mean that they won’t like it later,” (A103).

An additional theme that parents identified was that of observing reactions and expressions (Table 5.3). They understood the message was informing them that not all reactions can be easily construed or linked to the child not liking the food provided. Parents explained that the message was instructing them to watch for their child’s reaction, “[…] via facial expressions,” (A501) and to inform them that, “[…] also not all faces mean they don’t like the food,” (B006).
**Message 7: Picky Eating**

The picky eating message was reported by parents to be of moderate to high level of perceived importance (2.00 ± 1.62), have very to the most believable information in the message (1.30 ± 0.88), be moderately to very easy level of difficulty to implement with their child (2.78 ± 2.28), and be very likely to most likely to use with their child (1.65 ± 0.93) (Table 5.4).

One main theme that parents reported was patience with picky eaters (Table 5.3). A parent explained that, “It’s saying that picky eaters are common among toddlers. And what you should do is that you need to be patient […]” (A102). Some parents found it encouraging, as one stated their take-away from the message being that, “It’s okay if your kid is a picky eater, you just have to work through it,” (A002).

The other main theme expressed by parents was techniques to combat picky eating (Table 5.3). One technique that parents reported may help with picky eaters was involving their child more with foods and mealtime. One parent explained the message informed them to, “You know involve your child. Sit in the stool, help you cook. They’ll be more likely to eat,” (A101). Another example technique was to encourage routines around mealtimes with their picky eaters, as one parent stated, “Keep trying with healthy foods and a routine,” (A301).

**Message 8: Child Control of Intake**

Parents found the child control of intake message to have moderate to high level of importance (2.00 ± 1.76), moderately to very believable information within the message (2.23 ± 2.09), be somewhat to moderately easy to implement with their child (3.83 ± 2.67), and be moderately to very likely to use with their child (2.65 ± 2.01) (Table 5.4).
The main theme parents described was encouraging self-regulation (Table 5.3). One parent elaborated on this theme by explaining that it tells them, “To allow your child to decide how much they should eat and when to eat […] when they’re ready to eat and when they’re not,” (A106). Another parent expressed even further that, “The message is telling you to let your children eat food at their own pace,” (B108).

The other related theme identified by parents was no pressure to eat or food rewards (Table 5.3). Parents clearly stated that the message was saying, “Don’t reward the kids with food,” (A104) and, “To not pressure your child to eat,” (A101). One parent also put this theme into context by explaining parents should, “[…] not force them to finish what is in front of them, not using it as punishment or reward,” (B006).

*Message 9: Self-feeding*

The self-feeding message was seen by parents to have moderate to high level of importance (2.18 ± 1.68), moderately to very believable information within the message (2.07 ± 1.43), be moderately to very easy to implement with their child (2.96 ± 2.79), and be moderately to very likely to use with their child (2.15 ± 1.61) (Table 5.4).

The main theme identified by parents was to encourage self-feeding (Table 5.3). One quote stated this directly, “Just to encourage your baby to self-feed,” (B109). Another parent explained in more detail that the message was telling them, “That you should allow the baby to begin to learn to feed themselves around 6 months,” (B007).

The related theme that parents recognized was to let children explore with food and utensils (Table 5.3). They stated that the message was telling them what to do regarding feeding practices and what to expect. Parents understood that the material was informing them, “To
allow your baby to explore their own food,” (A404) and that “They [babies] are messy and that’s normal,” (A103). Part of the exploration process of self-feeding, as parents stated, included the child’s use of utensils, “Like switch from bottle to sippy cup and stuff,” (A102).

**Message 10: Family Meals**

Parents reported the family meals message to have high to the highest level of perceived importance (1.32 ± 0.89), very to most believable information in the message (1.17 ± 0.58), be moderately to very easy level of difficulty to implement with their child (2.32 ± 2.48), be very likely to most likely to use with their child (1.82 ± 1.71) (Table 5.4).

The main theme parents identified was that of including toddlers in family meals (Table 5.3). Parents found the importance of this being twofold, including a bonding experience and a developmental milestone for their child’s diet. One parent expressed that the message was saying, “That at the age of 1, it should be important to start eating as a family to create that bond,” (A402). Another parent explained the message was, “To encourage sitting down together as a family for meals, giving tips on how to do that, as well as what age your child can eat what everyone else is eating,” (B006).

The other theme reported by parents was about the amount and timing for toddler meals (Table 5.3). While speaking about the purpose of the message, one parent explained, “It’s about the amount and timing of feeding a toddler,” (A002). Another parent also stated that the message was not solely about mealtimes, but informed that, “It’s also good to have a healthy snack at regular time,” (A106).

**Message 11a: Peanut Introduction**
Parents reported the peanut introduction message to have high to the highest level of perceived importance ($1.26 \pm 0.69$), moderately to very believable information in the message ($2.04 \pm 2.36$), be moderately to very easy level of difficulty to implement with their child ($2.22 \pm 2.65$), and be very likely to most likely to use with their child ($1.52 \pm 1.88$) (Table 5.4).

The main theme that parents reported from this message was introducing peanuts into the diet (Table 5.3). One parent stated this directly as, “It’s about introducing peanuts into a child’s diet,” (A002). Other parents expressed the message as being more specific, for example one parent said that the message was providing, “Instructions when you are giving babies peanuts and how to give it to them,” (B404).

A related theme that parents also identified was food allergies and risks (Table 5.3). Parents focusing on this theme explained that the message was about paying attention to your child’s allergy risk and reactions. One quote did refer to peanut butter but concentrated mainly on the allergy risk level by stating, “Peanut butter can be given to your child depending on your child’s allergy risk,” (B007). Another parent expressed the message was telling parents, “To be aware of how children could have an allergic reaction,” (A402).

*Message 11b: Potential Food Allergens*

The potential food allergens message was found by parents to have high to the highest level of perceived importance ($1.09 \pm 0.29$), very to most believable information in the message ($1.38 \pm 1.53$), be moderately to very easy level of difficulty to implement with their child ($2.95 \pm 2.79$), and be very likely to most likely to use with their child ($1.36 \pm 1.22$) (Table 5.4).

The main theme, which was identified by parents, was introducing potential food allergens (Table 5.3). One parent stated it informed them that, “Some foods cause allergies and it
gives you a list of those. [...] And how to introduce foods to tell for that,” (A102). Another parent elaborated on the techniques provided by saying, “This message is about introducing potential allergens to your baby. The potential allergens should be introduced slowly and one at a time,” (B007).

Parents noted another main theme of the message as caution and identification of food allergens (Table 5.3). One parent stated that, “It’s kind of a warning or an alert about food allergies,” (A002). Other parents also explained that the message was telling them to, “[...] look for the allergy signs,” (B504) and then, “How to react if you see that your child has an allergy,” (A402).

**Message 12: Planning Meals and Snacks**

Parents reported the planning meals and snacks message to have high to the highest level of perceived importance (1.26 ± 0.75), very to most believable information in the message (1.17 ± 0.49), be moderately to very easy level of difficulty to implement with their child (2.48 ± 1.73), and be very likely to most likely to use with their child (1.43 ± 0.79) (Table 5.4).

The main theme reported by parents was a healthy meal plan (Table 5.3). This included guidance on how to create a meal plan structure for toddlers, as one parent explained by saying, “Basically it’s telling you, helping you to plan meals and snacks,” (A102). Another parent specified that it provided more detail on what the meals and snacks should look like, stating, “It’s about the types and amounts of foods that your child should be eating throughout the course of the day,” (A002).

The other main theme that was identified was providing diet variety (Table 5.3). One parent simply expressed that the message tells them to, “Incorporate lots of different types of
foods into the toddler’s diet” (B109). Parents explained this further by detailing that, “It’s showing how you should give the different varieties of healthy foods to your child” (A402) by telling you to, “Give your child a choice of healthy fruits and vegetables and meats […] ,” (A101).

5.4 Discussion

Overall, parents reported no difficulty understanding any of the messages, and they were also able to identify the purpose of each message as seen in the emerging themes. For each message, two emerging themes indicated parents’ perceptions of what the message was telling them to do and the main theme was always accurately identified. This may in part, be due, to the use of appropriate reading levels (at or below 6th grade) when developing the messages. The average literacy for adults in the United States is at the eighth-grade level; however, health education materials written at or below the sixth-grade reading level increase comprehension (Institute of Medicine (US) Committee on Health Literacy, 2004; Kirsch et al., 2002a; Safeer & Keenan, 2005; The Joint Commission, 2010). Recommendations by the Joint Commission state that health resources should be written at or below a fifth-grade reading level to ensure the use and understanding by a larger majority of the general population. A previous literature review also indicated that the use of pictures related to written text can improve attention, recall, and understanding of health education information (Houts et al., 2006). Individuals with lower literacy skills benefit even more when pictures are added to health education materials.

When evaluating the messages overall, parents ranked the messages related to potential food allergens and meal planning as most important. Some concerns related to food allergens may due to recent changes in recommendations on allergen-containing food introduction for
young children (Meyer, 2009; Togias et al., 2017; Turner & Campbell, 2017). A previous study also found that parents of young children reported more mealtime concerns and higher levels of parenting stress associated with their child’s food allergies (Herbert, Mehta, & Sharma, 2017). With changing recommendations and increased concerns and stress related to feeding a child with allergies, parents may view these topics at greater importance for child feeding materials.

Regarding meal and snack planning, previous qualitative studies found that low-income parents were concerned about preparing meals for their child and less confident about their ability to prepare meals at home (Engler-Stringer, 2010; R. Heller et al., 2018). Additionally, non-low-income parents have reported concerns about preparing easy meals for their children, and some barriers, such as convenience, have been found to prevent parents from preparing meals at home for their children (R. Heller et al., 2018; Robson et al., 2016). Socioeconomically diverse populations have shown concern and the need for information on meal planning and preparation, deeming this topic of importance for parents of young children.

The meal and snack planning and picky eating related messages were rated as most believable by parents. One systematic review of qualitative child feeding studies found that parents were emotionally invested in their child’s mealtime enjoyment and described feeling gratified when their child enjoyed mealtime (Rylatt & Cartwright, 2016). Since the Family Meals message encouraged family meals and eating together as a positive experience, parents who already feel strongly about this topic may find the information very believable. A previous systematic review also found that parents were motivated to avoid issues with picky eaters by compromising on the food provided and timing of meals due to the reported increase in associated stress around mealtimes (Rylatt & Cartwright, 2016). Since parents are already aware of picky eating issues, a message addressing these specific experiences may be very believable.
All messages were rated as moderately easy to the easiest to implement, except for Child Control of Intake. Studies have found that controlling parental feeding practices were positively correlated with concern for child’s weight or perception of unhealthy child weight status (Gregory et al., 2010; Harrison, Brodribb, Davies, & Hepworth, 2018; Wehrly et al., 2014). They were also positively correlated with perceived difficult child behaviors, such as food fussiness or excess food intake. Another previous qualitative study identified barriers to positive feeding practices, including child control of intake (Martin-Biggers et al., 2015). Parents reported believing they needed to be strict and in control for their child to have a healthy diet, and were less likely to utilize positive feeding practices if they were frustrated with their child’s food preferences or eating behaviors. If parents are accustomed to responding to concerns and difficulties in their child’s diet through increased parental control, it may be more difficult to begin implementing child control of intake as one responsive feeding practice but, it means that attention to these messages are even more important for early child obesity prevention.

Breastmilk and Formula Feeding messages were rated as easiest and most likely to be implemented by parents with their child. This may be due to a longstanding consensus among many professional agencies that promote exclusive breastfeeding and formula feeding for infants up to 6 months old (Academy of Nutrition and Dietetics, 2017; American Academy of Pediatrics, 2019; Centers for Disease Control and Prevention, 2018c; World Health Organization, 2018).

Another message that was rated as most likely and easy to implement was related to Foods to Avoid before Year 1. This may be explained by previous studies where parents reported a fear of choking when introducing new foods to their child and an ongoing choking concern throughout child feeding progression (R. Heller et al., 2018; Marduel Boulanger & Vernet, 2018). One key element determining a mother’s likelihood of adopting healthy feeding behaviors
is reflective motivation, or the conscious decision-making based on consequences of a behavior (Russell et al., 2016). Since this was perceived as easy to implement and included the reasons to avoid certain foods, such as health or safety consequences and choking risks, parents may be more likely to use this message which addressed both their fears and motivated them to adopt new actions.

Although this study targeted only one state population and therefore, not generalizable, participants were from a variety of areas including urban and suburban communities. The study participants were also primarily female, but this was likely due to the inclusion criteria that only one parent could participate and must provide at least half of the child feeding. Despite these limitations, this study had a racially, ethnically, and socioeconomically diverse and saturated sample within the targeted state.

5.5 Conclusion

The comprehensive set of child feeding and obesity prevention messages for parents of children birth to 2 years old were well understood, relevant, and feasible. These materials were easy and accurately understood, important and believable, and perceived as easy to implement and likely to use with their children by parents. Though the findings support the potential usefulness and effectiveness of these messages, additional behavioral intervention studies are needed to determine impact on parental feeding practice outcomes.
<table>
<thead>
<tr>
<th>Message Number</th>
<th>Message Topic</th>
<th>Message Header</th>
<th>Characteristics of Responsive Feeding</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Breastmilk and formula feeding</td>
<td>“For the first 6 months, your baby only needs breast milk or iron-fortified formula.”</td>
<td>Encouragement of healthy developmentally appropriate food or beverages and proper response to hunger and satiety cues</td>
</tr>
<tr>
<td>2</td>
<td>Starting solids</td>
<td>“Your baby may be ready for solid foods between 4 and 6 months if they are able to do the following.”</td>
<td>Offering of healthy developmentally appropriate food or beverages and proper response to hunger and satiety cues</td>
</tr>
<tr>
<td>3</td>
<td>Complementary feeding</td>
<td>“Between 6 and 11 months, your baby may eat every two to three hours. This is about five or six times per day.”</td>
<td>Offering of healthy developmentally appropriate food or beverages and proper response to hunger and satiety cues</td>
</tr>
<tr>
<td>4</td>
<td>Foods to avoid before 1 year</td>
<td>“Do NOT give your baby the following before he/she turns 1 year old.”</td>
<td>Encouragement of healthy developmentally appropriate food or beverages</td>
</tr>
<tr>
<td>5</td>
<td>Food variety</td>
<td>“Give your baby a variety of food made in different ways. Include foods from all groups (vegetables, fruit, grains, meat/protein, dairy).”</td>
<td>Offering of healthy developmentally appropriate beverages and healthy, tasty foods</td>
</tr>
<tr>
<td>6</td>
<td>Offering new foods</td>
<td>“Be patient when offering a new food.”</td>
<td>Responding promptly to the child’s hunger and satiety signals</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Emotionally supportive, contingent, and developmentally appropriate feeding response</td>
</tr>
<tr>
<td>7</td>
<td>Picky eating</td>
<td>“Picky eating is very common among toddlers. Sometimes they start refusing food that they once liked.”</td>
<td>Pleasant, warm, and nurturing feeding environment</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Emotionally supportive, contingent, and developmentally appropriate feeding response</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Offering of healthy developmentally appropriate food or beverages and proper response to hunger and satiety cues</td>
</tr>
<tr>
<td></td>
<td>Child control of intake</td>
<td>“Allow your child to decide how much to eat and if they want to eat. As a parent, you decide what, when and where your child will eat.”</td>
<td>Pleasant, warm, and nurturing feeding environment</td>
</tr>
<tr>
<td>---</td>
<td>--------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Responding promptly to the child’s hunger and satiety signals</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Emotionally supportive, contingent, and developmentally appropriate feeding response</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Offering of healthy developmentally appropriate food or beverages</td>
</tr>
<tr>
<td>9</td>
<td>Self-feeding</td>
<td>“Encourage your baby to self-feed.”</td>
<td>Children can develop motor skills and decide when to start and stop eating based on their hunger signals</td>
</tr>
<tr>
<td>10</td>
<td>Family meals</td>
<td>“Aim to have family meals together by the time your child is 1 year old. Family meals help form healthy eating habits and have other benefits.”</td>
<td>Pleasant, warm, and nurturing feeding environment</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Offering of healthy developmentally appropriate beverages and healthy, tasty foods</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Predictable feeding schedules help ensure child is hungry when offered food</td>
</tr>
<tr>
<td>11a</td>
<td>Peanut introduction</td>
<td>“Peanut information for your baby.”</td>
<td>Offering of developmentally appropriate food or beverages</td>
</tr>
<tr>
<td>11b</td>
<td>Potential food allergens</td>
<td>“Some foods such as dairy, food with peanuts, eggs, soy, wheat, fish and shellfish may cause allergies.”</td>
<td>Offering of developmentally appropriate food or beverages</td>
</tr>
<tr>
<td>12</td>
<td>Planning meals and snacks</td>
<td>“Plan meals and snacks to provide a variety of healthy food from all food groups for your toddler.”</td>
<td>Offering of healthy developmentally appropriate food or beverages</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Predictable feeding schedules help ensure child is hungry when offered food</td>
</tr>
</tbody>
</table>
Table 5.2. Parent Demographics (n=23)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>33.3</td>
<td>6.8</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>4</td>
<td>17.4</td>
</tr>
<tr>
<td>Female</td>
<td>19</td>
<td>82.6</td>
</tr>
<tr>
<td>Race/Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Hispanic White</td>
<td>12</td>
<td>52.2</td>
</tr>
<tr>
<td>Black</td>
<td>4</td>
<td>17.4</td>
</tr>
<tr>
<td>Hispanic</td>
<td>4</td>
<td>17.4</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>13.0</td>
</tr>
<tr>
<td>Income Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-low-income</td>
<td>12</td>
<td>52.2</td>
</tr>
<tr>
<td>Low-income</td>
<td>11</td>
<td>47.8</td>
</tr>
<tr>
<td>Education Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelor’s Degree or more</td>
<td>14</td>
<td>60.9</td>
</tr>
<tr>
<td>Less than Bachelor’s Degree</td>
<td>9</td>
<td>39.1</td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married or with Partner</td>
<td>17</td>
<td>73.9</td>
</tr>
<tr>
<td>Single</td>
<td>6</td>
<td>26.1</td>
</tr>
<tr>
<td>Employment Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployed or Stay-at-home Parent</td>
<td>6</td>
<td>26.1</td>
</tr>
<tr>
<td>Part-time</td>
<td>2</td>
<td>8.7</td>
</tr>
<tr>
<td>Full-time</td>
<td>15</td>
<td>65.2</td>
</tr>
<tr>
<td>Number of Children</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>7</td>
<td>30.4</td>
</tr>
<tr>
<td>2</td>
<td>11</td>
<td>47.8</td>
</tr>
<tr>
<td>3 or more</td>
<td>5</td>
<td>21.7</td>
</tr>
<tr>
<td>Message Number</td>
<td>Message Topic</td>
<td>Message Header</td>
</tr>
<tr>
<td>----------------</td>
<td>-----------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>1</td>
<td>Breastmilk and formula feeding</td>
<td>“For the first 6 months, your baby only needs breast milk or iron-fortified formula.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Behaviors to avoid during bottle feeding&lt;br&gt;“[…] basically not to put cereal in your baby’s milk. And do not give baby bottle to go to sleep” (A102)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Starting solids</td>
<td>“Your baby may be ready for solid foods between 4 and 6 months if they are able to do the following.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Techniques on first foods&lt;br&gt;“[…] it’s telling you how to introduce solids to your baby” (B500)</td>
</tr>
<tr>
<td>3</td>
<td>Complementary feeding</td>
<td>“Between 6 and 11 months, your baby may eat every two to three hours. This is about five or six times per day.”</td>
</tr>
<tr>
<td>4</td>
<td>Foods to avoid before 1 year</td>
<td>“Do NOT give your baby the following”</td>
</tr>
<tr>
<td>5</td>
<td>Food variety</td>
<td>“Give your baby a variety of food made in different ways. Include foods from all groups (vegetables, fruit, grains, meat/protein, dairy).”</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>6</td>
<td>Offering new foods</td>
<td>“Be patient when offering a new food.”</td>
</tr>
<tr>
<td>7</td>
<td>Picky eating</td>
<td>“Picky eating is very common among toddlers. Sometimes they start refusing food that they once liked.”</td>
</tr>
<tr>
<td>8</td>
<td>Child control of intake</td>
<td>“Allow your child to decide how much to”</td>
</tr>
<tr>
<td>9</td>
<td>Self-feeding</td>
<td>“Encourage your baby to self-feed.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Let children explore with food and utensils</td>
</tr>
<tr>
<td>10</td>
<td>Family meals</td>
<td>“Aim to have family meals together by the time your child is 1 year old. Family meals help form healthy eating habits and have other benefits.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Amount and timing for toddler meals</td>
</tr>
<tr>
<td>11a</td>
<td>Peanut introduction</td>
<td>“Peanut information for your baby.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Food allergies and risks</td>
</tr>
<tr>
<td>11b</td>
<td>Potential food allergens</td>
<td>“Some foods such as dairy, food with peanuts, eggs, soy, wheat, fish</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Planning meals and snacks</td>
<td>“Plan meals and snacks to provide a variety of healthy food from all food groups for your toddler.”</td>
</tr>
<tr>
<td>----</td>
<td>---------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Caution and identification of food allergens</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Providing diet variety</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 5.4. Relevance and Feasibility of 12 Core Messages (n=23)

<table>
<thead>
<tr>
<th>Message Number</th>
<th>Message Topic</th>
<th>Importance Mean ± SD</th>
<th>Believability Mean ± SD</th>
<th>Perceived Ease of Implementation Mean ± SD</th>
<th>Likelihood of Use Mean ± SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Breastmilk and formula feeding</td>
<td>1.57 ± 0.99</td>
<td>1.61 ± 1.50</td>
<td>1.74 ± 1.84</td>
<td>1.09 ± 0.29</td>
</tr>
<tr>
<td>2</td>
<td>Starting solids</td>
<td>2.23 ± 1.72</td>
<td>2.35 ± 1.99</td>
<td>2.20 ± 1.53</td>
<td>2.57 ± 2.68</td>
</tr>
<tr>
<td>3</td>
<td>Complementary feeding</td>
<td>1.70 ± 1.50</td>
<td>2.04 ± 1.66</td>
<td>2.87 ± 2.10</td>
<td>2.13 ± 1.79</td>
</tr>
<tr>
<td>4</td>
<td>Foods to avoid before 1 year</td>
<td>1.61 ± 2.02</td>
<td>1.45 ± 1.34</td>
<td>1.99 ± 1.95</td>
<td>1.30 ± 1.26</td>
</tr>
<tr>
<td>5</td>
<td>Food variety</td>
<td>1.70 ± 1.15</td>
<td>1.91 ± 1.41</td>
<td>2.28 ± 1.68</td>
<td>1.89 ± 1.68</td>
</tr>
<tr>
<td>6</td>
<td>Offering new foods</td>
<td>1.65 ± 1.07</td>
<td>1.35 ± 0.93</td>
<td>2.89 ± 2.57</td>
<td>1.96 ± 1.26</td>
</tr>
<tr>
<td>7</td>
<td>Picky eating</td>
<td>2.00 ± 1.62</td>
<td>1.30 ± 0.88</td>
<td>2.78 ± 2.28</td>
<td>1.65 ± 0.93</td>
</tr>
<tr>
<td>8</td>
<td>Child control of intake</td>
<td>2.00 ± 1.76</td>
<td>2.23 ± 2.09</td>
<td>3.83 ± 2.67</td>
<td>2.65 ± 2.01</td>
</tr>
<tr>
<td>9</td>
<td>Self-feeding</td>
<td>2.18 ± 1.68</td>
<td>2.07 ± 1.43</td>
<td>2.96 ± 2.79</td>
<td>2.15 ± 1.61</td>
</tr>
<tr>
<td>10</td>
<td>Family meals</td>
<td>1.32 ± 0.89</td>
<td>1.17 ± 0.58</td>
<td>2.32 ± 2.48</td>
<td>1.82 ± 1.71</td>
</tr>
<tr>
<td>11a</td>
<td>Peanut introduction</td>
<td>1.26 ± 0.69</td>
<td>2.04 ± 2.36</td>
<td>2.22 ± 2.65</td>
<td>1.52 ± 1.88</td>
</tr>
<tr>
<td>11b</td>
<td>Potential food allergens</td>
<td>1.09 ± 0.29</td>
<td>1.38 ± 1.53</td>
<td>2.95 ± 2.79</td>
<td>1.36 ± 1.22</td>
</tr>
<tr>
<td>12</td>
<td>Planning meals and snacks</td>
<td>1.26 ± 0.75</td>
<td>1.17 ± 0.49</td>
<td>2.48 ± 1.73</td>
<td>1.43 ± 0.79</td>
</tr>
</tbody>
</table>

*a* Importance was ranked on a 10-point Likert scale; 1 being the highest level of perceived importance

*b* Believability was ranked on a 10-point Likert scale, 1 being the most believable information within the message

*c* Perceived Ease of Implementation was ranked on a 10-point Likert scale; 1 being the easiest level of difficulty to implement with one’s child

*d* Likelihood of Use was ranked on a 10-point Likert scale; 1 being most likely to use with one’s child
Figure 5.1. Sample Message Sheet in English
Alimentando a su bebé

Sea paciente cuando le ofrezca un nuevo alimento.

- No se rinda si su bebé no quiere la comida la primera vez que usted se la ofrece. Puede tomar 15 a 20 veces antes de que su bebé aprenda a gustarle una nueva comida.
- Algunos bebés hacen "caras" que parece que no les gusta el nuevo alimento. Esto es parte normal de aprender a gustarle nuevas comidas. Eso no significa que a su bebé no le gusta la comida. Sea paciente y continúe tratando.

Figure 5.2. Sample Message Sheet in Spanish
Chapter 6: Conclusion

6.1 Major Findings

These studies aimed to investigate barriers preventing parents of children birth to 2 years of age from implementing recommended feeding practices in order to identify education needs and develop a tested set of evidence-based messages to promote optimal child feeding and obesity prevention. Overall, there was a lack of evidence-based child feeding and obesity prevention messages designed for use with parents. Considering future educational needs, it was necessary to determine why parents are not following current recommendations, to understand what knowledge was lacking, and to determine how best to provide the information to parents.

Within the first study, providers identified several barriers that they perceived prevented parents from implementing optimal feeding practices with their child birth to 2 years old. The primary barriers included convenience of food options, marketing of food products, and cultural and familial influences, which were all exacerbated by a lack of knowledge about optimal child feeding and nutrition. Interviews with providers also provided insight into the identification of obesogenic behaviors that must be further addressed with parents in order to prevent early childhood obesity. These behaviors included overfeeding, early and inappropriate transitioning to solids, limiting children’s autonomy and self-regulation, and providing unbalanced diets. Further, information that is appropriate for parents from diverse cultural and educational backgrounds, engaging with text and visuals, and focused on key topics such as complementary feeding was reported as a need by providers.

The second study investigated educational needs, identified through interviews with parents, that must be addressed to promote optimal child feeding practices and obesity
prevention initiatives. The findings reinforced many topics identified in the provider interviews. Parents described the need for more information related to mealtime preparation, food intake, affordability, self-feeding, and food and ingredient knowledge. By stratifying the data analysis, it was also possible to identify subthemes that must be considered in developing future educational materials for parents of diverse socioeconomic backgrounds. Low-income parents were more concerned about receiving information including basic and practical implementation of child feeding practices, such as cooking skills, assessing proper intake amounts, and incorporating a greater variety of foods. Non-low-income parents were more concerned about safety issues and specialty food options, including homemade baby foods, choking hazards, and food additives and allergens. Overall, these subthemes can be addressed by including more specific information within each main message topic.

With the findings from interviews with both providers and parents, it is clear that child feeding materials should include topics about transitioning to solids, proper amounts and varieties of foods, choking and allergen issues, while promoting child autonomy and self-regulation for children birth to 2 years. The information must also be culturally sensitive, available in English and Spanish, written at a low literacy level, and engaging with images that support the written message.

The findings from the first two studies were used as a basis in the development of sample child feeding and obesity prevention messages and strategies in the final study. The child feeding and obesity prevention materials containing these messages focused on topics including: breastmilk and formula feeding, starting solids, complementary feeding, foods to avoid before 1 year, food variety, offering new foods, picky eating, child control of intake, self-feeding, family meals, peanut introduction, potential food allergens, and planning snacks and meals. The
materials were tested to confirm that parents understood and comprehended the meaning and purposes of the messages. Parents also found these messages important, believable, easy to implement, and reported being likely to use them with their own child, which supports the potential effectiveness of the educational materials.

Taken together, these studies have generated a set of comprehensive, evidence-based child feeding and obesity prevention message materials for parents of infants and toddlers. The findings from these studies can be utilized and incorporated in future development of materials and interventions aimed to promote early childhood obesity prevention.

6.2 Strengths

These studies included diverse sociodemographic populations, including minority and low-income parents. The first two studies included Spanish-speaking parents and providers working with Spanish-speaking families to include and incorporate the perspectives and needs of this population. The sample of providers was diverse throughout the state to represent a variety of experiences, comprising of healthcare, community-based, and education providers. Parents from all geographical areas were included in the study, representing urban, suburban, and rural regions of Connecticut. Parents of children from birth to 2 years were all represented in the sample to obtain insight throughout the targeted age range. Both primiparous and multiparous parents were in the sample to allow perspectives from first-time and experienced parents. The final materials were all available in English and also developed for Spanish-speaking populations, through translated text and the use of culturally appropriate images.
6.3 Limitations

Only parents within the state of Connecticut were recruited into the study due to the available resources for conducting these studies. Since the studies focused on child feeding, only a parent providing at least half of their child’s feeding could participate. In most instances, this was the female or mother figure, which resulted in few males or fathers within the final sample. The third study was limited to English-speaking parents due to time and funding resources at the end of the study duration.

6.4 Future Directions

Future studies are needed to further test how the set of child feeding messages can be implemented to promote behavior change. Using a preliminary intervention study with validated child feeding questionnaires could provide information on how effective the messages are at changing feeding practices when provided to parents. Optimal delivery methods should be compared to identify the best source and media that the information is provided through. Potential options could include information delivery through healthcare or community providers, and can also investigate potential differences through physical versus electronic delivery methods. These messages can also be incorporated into intervention programs or workshops targeting changes in parental feeding behaviors or early childhood obesity prevention. With any new or changing guidelines, these messages would need to be updated to support future research findings.
Appendix A: IRB Approval for Interviews with Providers

DATE: February 22, 2019

TO: Amy R. Mobley, Ph.D.
    NUSC

FROM: Pamela L. Erickson, Ph.D.
      Chair, Institutional Review Board
      FWA # 00007125

RE: Protocol #H16-029: “Interviews with Providers to Develop Childhood Obesity Prevention Message for Parents of Young Children”
    Please refer to the Protocol# in all future correspondence with the IRB.
    Funding Source: Child Health and Development Institute of CT
    Re-approval Period: From: February 25, 2019 Valid Through: February 24, 2020
    “Expiration Date”

The Institutional Review Board (IRB) re-approved this protocol on February 22, 2019. The research presents no more than minimal risk to human subjects and qualifies for expedited approval under category #7. Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies. Because this study is closed to new enrollment, and remains open for data analysis only, the consent form was not re-validated.

All investigators of the University of Connecticut are responsible for complying with the “Responsibilities of Research Investigators” attached to this letter.

Re-approval: It is the investigator's responsibility to apply for re-approval of ongoing research at least once yearly, or more often if specified by the IRB. The Re-approval/Termination Form (IRB-2) and other applicable re-approval materials must be submitted one month prior to the expiration date noted above.

Modifications: If you wish to change any aspect of this study, such as the procedures, the consent forms, the investigators, or funding source, please submit the changes in writing to the IRB using the Amendment Review Form (IRB-3). All modifications must be reviewed and approved by the IRB prior to initiation.

Audit: All protocols approved by the IRB may be audited by the Post Approval Monitor.

Please keep this letter with your copy of the approved protocol.

Attachments:
1. Validated IRB-2 Re-approval Form
2. “Responsibilities of Research Investigators”
Appendix B: Information Sheet for Interviews with Providers

Information Sheet for Participation in a Research Study

UCONN
UNIVERSITY OF CONNECTICUT

Principal Investigator: Amy R. Mobley, PhD, RD
Study Title: Interviews with providers to develop childhood obesity prevention messages for parents of young children
Sponsor: Child Health and Development Institute of Connecticut, Inc.

Introduction
You are invited to participate in a research study to determine how parents feed their young children and information needed for future education programs. You are being asked to participate because you are a health care provider or key expert working with families containing children between the ages of 0 and 2 years old in Connecticut.

This information sheet will provide you with information you will need to understand about why the study is being done and why you are being invited to participate. It will also describe what you will need to do to participate and any known risks, inconveniences or discomforts that you may have while participating. We encourage you to take some time to think this over. We also encourage you to ask questions now and at any time. If you decide to participate, you will be given a copy of it.

Why is this study being done?
We are conducting this research study to determine what messages and information needs to be provided to parents about feeding young children to prevent childhood obesity later in life.

What are the study procedures? What will I be asked to do?
If you agree to take part in this study, you will be interviewed one-on-one and audiotaped by a trained researcher. This interview may be conducted over the phone at your convenience. During the interview, you will be asked about what information you provide parents on child feeding practices and the resources that you use or distribute. The total interview will last about 60 minutes. In addition, you will be asked for permission to contact you for future related studies. Your decision to provide us with this information will not affect your eligibility for this study.

What are the risks or inconveniences of the study?
We believe there are no known risks associated with this research study; however, a possible inconvenience may be the time it takes to complete the study.

What are the benefits of the study?
You may not directly benefit from this research; however, we hope that your participation in the study may inform future education efforts in helping parents feed their young children.
Will I receive payment for participation? Are there costs to participate?
There are no costs to participating in this study, besides the time involved. There will be no direct payment for participation. However, the materials developed during the study will be available as resources for you and other providers in the future. You will also be offered a small thank you gift worth $10 as a token of our appreciation for your time.

How will my personal information be protected?
The following procedures will be used to protect the confidentiality of the data collected from you. You will be assigned a number by the interviewer based on location of interview, order of participation and the date in which you participated. No names or other identifiable information will be used or recorded during the study. The audiotapes will be downloaded from a digital recorder, saved on a password protected computer in room 225 of the Roy E. Jones Building and transcribed for themed responses to the questions. No names will be included on the typed files.

All documents will be stored in a locked file cabinet in room 225 of the Roy Jones Building, Storrs, CT. Data will be entered on a University-owned computer used only by the research lab members and is password protected. Any computers hosting such files will be password protected to prevent access by unauthorized users. At the conclusion of this study, the researchers may publish their findings. Information will be presented in summary format and individuals will not be identified in any publications or presentations.

You should also know that the UConn Institutional Review Board (IRB) and Research Compliance Services may inspect study records as part of its auditing program, but these reviews will only focus on the researchers and not on your responses or involvement. The IRB is a group of people who review research studies to protect the rights and welfare of research participants.

Can I stop being in the study and what are my rights?
You do not have to be in this study if you do not want to. If you agree to be in the study, but later change your mind, you may drop out at any time. There are no penalties or consequences of any kind if you decide that you do not want to participate. You do not have to answer any questions that you don’t want to answer. If you refuse to answer a question, the question will be skipped and the next question will be asked.

Whom do I contact if I have questions about the study?
Take as long as you like before you make a decision. We will be happy to answer any question you have about this study. If you have further questions about this project or if you have a research-related problem, you may contact the principal investigator, Dr. Amy Mobley at 860-486-5073 or amy.mobley@uconn.edu. If you have any questions concerning your rights as a research subject, you may contact the UConn Institutional Review Board (IRB) at 860-486-8802.
Appendix C: Interview Script for Interviews with Providers

Welcome Script:
Thank you for agreeing to be interviewed for our project. We will be audiotaping this interview and hope that our findings will be beneficial to providers and key experts like yourself in Connecticut and throughout the country. If you are ready, I will begin with the questions.

Interview question guide for health providers/key experts:
1. Introductory questions:
   a. What is your current position/role working with families of young children and how long have you been in this field?
   b. Please describe the type of families and children that you work with.
   c. What do you think is the most rewarding part of working with families and young children?

2. What are some common resources or recommendations that you provide to parents for their baby/child from ages 0 to 2 years regarding feeding practices and physical activity? (sources, handouts, websites, referrals, etc.) [Note to interviewer: Please ask them to provide copies or give them an envelope with postage to mail us back the materials]

3. Let’s talk about the feeding practices/resources.
   a. What are some common misconceptions/confusion that parents have regarding feeding their baby/child?
      i. If parents have mentioned these to you, where do these misconceptions tend to come from?
      ii. What are some issues/barriers that parents face regarding breastfeeding vs. formula feeding?
      iii. What are some issues parents face with complementary foods?
         1. What are some recommendations you give for encouraging children to try new foods?
         2. How well do parents follow through with these practices and if so, how successful have they been?
         3. What foods are children lacking during or after the transition to table foods?
         4. What foods or beverages are children getting too much of during or after the transition to table foods?
   b. Are there any foods/drinks that you suggest parents avoid giving to their children?
      i. At any particular age(s) & why?
      ii. How well are parents able to follow this advice?
         1. What reasons do they give for not following it?
      iii. What is your current recommendation as it relates to the introduction of cow’s milk [prompts: when to introduce (age of child), type of milk]
   c. What foods or food related practices do parents have the most trouble implementing?
      i. What are the most common reasons why parents don’t or are unable to follow the feeding advice or suggestions given?
d. How often do you (or your organization) talk to parents about childhood obesity prevention in their very young children? (ages 0 to 2 years)
   i. What would be a reason that would prompt you to talk to them about it?
   ii. What specifically do you discuss?

4. Now let’s talk about child activity patterns/recommendations:
   a. What recommendations, if any, do you provide regarding child screen time?
      i. How do these recommendations change with age?
   b. What recommendations do you provide for children’s physical activity?
      i. What examples do you provide as physical activity for very young children?
         (Include different age groups)
   c. What issues/concerns do parents report with implementing these screen time or physical activity recommendations?

5. Now we are going to talk about resources for child feeding and related information:
   a. Thinking back to when we asked you about information you share with parents, where does the information you share (or your clinic or organization) come from about child feeding? (e.g. websites, clinics, other pediatricians, agencies, etc.) [Include year of reference if known]
   b. How do you usually give the information to parents?
      i. [Prompts: e.g. verbal counseling, printed brochures or handouts, websites, apps, referrals to other professionals, other]
   c. How effective do you believe the educational resources are at helping parents follow child feeding recommendations?
      i. Specifically, what recommendation(s) is/are the easiest or has been most successful for parents to follow?
      ii. What has been the most difficult recommendation(s) for parents to follow?
   d. What other resources would be useful for you (as a provider or within your organization) to further educate parents about feeding their child?
   e. What format (e.g. website, printed) would be most helpful for the resources?
      i. What would be the best method of getting you the resources?

6. The purpose of this interview was to help us determine what information parents/caregivers of babies and toddlers need or would like to learn about child feeding and how we could help them get it. Is there something else you think we should know?

Closing script:
Thank you for your time today. If you are willing, we would appreciate if we could re-contact you for a future interview once we have developed some key messages for parents that we would like to test. With your permission, I will collect your contact information for the future if you are interested. If not, no problem. We appreciate your help!
Appendix D: IRB Approval for Interviews with Parents

DATE: January 18, 2019

TO: Amy Mobley, Ph.D.
Nutritional Sciences

FROM: Pamela I. Erickson, Ph.D.
Chair, Institutional Review Board
FWA# 00007125

RE: Protocol #H15-101: “Feeding and Activity Messages for Parents and Caregivers of Young Children”
Please refer to the Protocol# in all future correspondence with the IRB.
Funding Source: Children’s Fund of Connecticut/CHDI
Re-approval Period: From: January 28, 2019 Valid Through: January 27, 2020
“Expiration Date”

The Institutional Review Board (IRB) re-approved this protocol on January 18, 2019. The research presents no more than minimal risk to human subjects and qualifies for expedited approval under category #7. Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies. Because this study is closed to new enrollment, and remains open for data analysis only, the consent form was not re-validated.

All investigators of the University of Connecticut are responsible for complying with the “Responsibilities of Research Investigators” attached to this letter.

Re-approval: It is the investigator's responsibility to apply for re-approval of ongoing research at least once yearly, or more often if specified by the IRB. The Re-approval/Termination Form (IRB-2) and other applicable re-approval materials must be submitted one month prior to the expiration date noted above.

Modifications: If you wish to change any aspect of this study, such as the procedures, the consent forms, the investigators, or funding source, please submit the changes in writing to the IRB using the Amendment Review Form (IRB-3). All modifications must be reviewed and approved by the IRB prior to initiation.

Audit: All protocols approved by the IRB may be audited by the Research Compliance Monitor.

Please keep this letter with your copy of the approved protocol.

Attachments:
1. Validated IRB-2 Re-approval Form
2. “Responsibilities of Research Investigators”
Appendix E: Flyer for Parent Interview Recruitment in English

UNIVERSITY OF CONNECTICUT

Parent Volunteers Wanted for a Research Study

Feeding and activity messages for parents and caregivers of young children

We are conducting one-on-one interviews to talk to parents with children ages 0 to 2 years old about nutrition and feeding their young child. A one-time, 60 minute interview will be conducted at a convenient community site.

- Each parent will be interviewed separately and recorded during a one-on-one interview including questions about themselves and feeding their young child. Height and weight will also be measured of the parent and reported for the child.
- Who is eligible?
  - Parents (18 years and older) with at least 1 child between the ages of 0 and 2 years old living in Connecticut
  - Able to speak and read English

There may not be a direct benefit from this research. However, we hope that the interviews can help us learn more about how parents feed their children and what educational messages are needed for future programs.

Each parent will each receive a $20 gift card after the interview.

To learn more about this project, please contact the Community Nutrition Research Office at the University of Connecticut at amy.mobley@uconn.edu or 860-486-3681.
Se necesitan padres o madres voluntarios(as) para participar en estudio de investigación.

Mensajes de alimentación y actividad para padres y cuidadores de niños(as) pequeños(as)

Estamos llevando a cabo entrevistas cara a cara con padres de niños y niñas de 0 a 2 años acerca de la nutrición y la alimentación de su hijo(a) pequeño(a). La entrevista se realizará una sola vez, durará 60 minutos y se llevará a cabo en un sitio de la comunidad conveniente para la persona entrevistada.

- Cada padre o madre será entrevistado por separado y se le grabará durante la entrevista cara a cara, la cual incluirá preguntas acerca de sí mismos y de cómo alimentan a su hijo(a) pequeño(a). La estatura y el peso del padre o madre también serán medidos, y se preguntará al padre o madre por la estatura y el peso de su hijo(a).
- ¿Quién es elegible?
  - Padres o madres (18 años de edad o más) con al menos un hijo o hija entre 0 y 2 años de edad que vivan en Connecticut.
  - Que puedan hablar o escribir en Español.

Puede que no haya un beneficio directo de esta investigación. Sin embargo, esperamos que las entrevistas pueden ayudarnos a aprender más acerca de cómo los padres alimentan a sus hijos y qué mensajes educativos son necesarios para programas futuros.

Cada padre recibirá una tarjeta de regalo de $20 después de la entrevista.

*Para conocer más acerca de este proyecto, por favor contactar a la Oficina de Nutrición Comunitaria de la Universidad de Connecticut al correo nutricion.uconn@gmail.com o al teléfono 860-486-3681.*
Appendix G: Consent Form for Interviews with Parents in English

Consent Form for Participation in a Research Study

**UConn**

**UNIVERSITY OF CONNECTICUT**

**Principal Investigator:** Amy R Mobley, PhD, RD  
**Study Title:** Feeding and Activity Messages for Parents and Caregivers of Young Children  
**Sponsor:** Child Health and Development Institute of Connecticut

**Introduction**

You are invited to participate in a research study to determine how parents feed their young children and information needed for future education programs. You are being asked to participate because you have a child between the ages of 0 and 2 years old and are able to speak and read English.

This consent form will give you the information you will need to understand why this study is being done and why you are being invited to participate. It will also describe what you will need to do to participate and any known risks, inconveniences or discomforts that you may have while participating. We encourage you to take some time to think this over. We also encourage you to ask questions now and at any time. If you decide to participate, you will be asked to sign this form and it will be a record of your agreement to participate. You will be given a copy of it.

**Why is this study being done?**

We are conducting this research study to determine what messages and information needs to be provided to parents about feeding young children to prevent childhood obesity later in life.

**What are the study procedures? What will I be asked to do?**

If you agree to take part in this study, you will be interviewed one-on-one and audiotaped by a trained researcher. During the interview, you will be asked about how you feed your child and where you get information about feeding him/her. Prior to the interview, you will complete a questionnaire about you and your child. We will also measure your and your child’s (age 0-2 years) height and weight or collect the information. The total interview will last about 60 minutes. In addition, you will be asked for permission to contact you for future related studies. Your decision to provide us with this information will not affect your eligibility for this study.

**What are the risks or inconveniences of the study?**

We believe there are no known risks associated with this research study; however, a possible inconvenience may be the time it takes to complete the study.

**What are the benefits of the study?**

You may not directly benefit from this research; however, we hope that your participation in the study may inform future education efforts in helping parents feed their young children.

**Will I receive payment for participation? Are there costs to participate?**

There are no costs to participating in this study, besides the time involved. To thank you for your participation you will each be given a $20 gift card at the end of the interview.
How will my personal information be protected?
The following procedures will be used to protect the confidentiality of the data collected from you. You will be assigned a number by the interviewer based on location of interview, order of participation and the date in which you participated. No names or other identifiable information will be used or recorded during the study. The audiotapes will be downloaded from a digital recorder, saved on a password protected computer in room 225 of the Roy E. Jones Building and transcribed for themed responses to the questions. No names will be included on the typed files.

All documents will be stored in a locked file cabinet in room 225 of the Roy Jones Building, Storrs, CT. Data will be entered on a University-owned computer used only by the research lab members and is password protected. Any computers hosting such files will be password protected to prevent access by unauthorized users. At the conclusion of this study, the researchers may publish their findings. Information will be presented in summary format and individuals will not be identified in any publications or presentations.

You should also know that the UConn Institutional Review Board (IRB) and Research Compliance Services may inspect study records as part of its auditing program, but these reviews will only focus on the researchers and not on your responses or involvement. The IRB is a group of people who review research studies to protect the rights and welfare of research participants.

Can I stop being in the study and what are my rights?
You do not have to be in this study if you do not want to. If you agree to be in the study, but later change your mind, you may drop out at any time. There are no penalties or consequences of any kind if you decide that you do not want to participate. You do not have to answer any questions that you don’t want to answer. If you refuse to answer a question, the question will be skipped and the next question will be asked. You may also refuse for yourself or your child (ages 0-2 years) to be weighed and measured or instead, self-report the measurements for you or your child.

Whom do I contact if I have questions about the study?
Take as long as you like before you make a decision. We will be happy to answer any question you have about this study. If you have further questions about this project or if you have a research-related problem, you may contact the principal investigator, Dr. Amy Mobley at 860-486-5073 or amy.mobley@uconn.edu. If you have any questions concerning your rights as a research subject, you may contact the UConn Institutional Review Board (IRB) at 860-486-8802.

Documentation of Consent:
I have read this form and decided that I will participate in the project described above. Its general purposes, the particulars of involvement and possible risks and inconveniences have been explained to my satisfaction. I understand that I can withdraw at any time. My signature also indicates that I have received a copy of this consent form.

Participant Signature: ___________________________ Print Name: ___________________________ Date: ________

Signature of Person Obtaining Consent: ___________________________ Print Name: ___________________________ Date: ________
Appendix H: Consent Form for Interviews with Parents in Spanish

Consent Form for Participation in a Research Study in SPANISH

UGONN
UNIVERSITY OF CONNECTICUT

Investigadora principal: Amy R Mobley, PhD, RD
Título del estudio: Mensajes sobre alimentación y actividad para padres y cuidadores de niños y niñas

Introducción
Usted está invitado(a) a participar en una investigación para determinar cómo los padres alimentan a sus niños pequeños y la información necesaria para futuros programas de educación. Se le está pidiendo a participar porque tiene un niño o niña entre las edades de 0 y 2 años de edad y es capaz de hablar y leer en español.

Este formulario de consentimiento le dará la información necesaria para entender por qué este estudio se está haciendo y por qué va a ser invitado a participar. También describirá lo que usted necesita hacer para participar. También se le explicará cualquier riesgo conocido e inconvenientes o molestias que pueda tener durante su participación. Le animamos a tomar algún tiempo para pensar sobre esto. Le invitamos a hacer preguntas ahora y en cualquier momento. Si decide participar, se le pedirá que firme este formulario y su firma será un registro de su acuerdo para participar. Se le dará una copia de este consentimiento.

¿Porqué se está haciendo esta investigación?
Estamos llevando a cabo este estudio de investigación para determinar los mensajes y la información que debe ser proporcionada a los padres sobre la alimentación de los niños y niñas, para así prevenir la obesidad infantil en los años siguientes de vida.

¿Cuáles son los procedimientos del estudio? ¿Qué se le pedirá hacer?
Si acepta participar en este estudio, usted será entrevistado(a) cara a cara y su entrevista será grabada por un investigador entrenado. Durante la entrevista, se le preguntará acerca de cómo usted alimenta a su hijo o hija, y dónde obtiene información sobre la alimentación de él o ella. Antes de la entrevista, deberá completar un cuestionario acerca de usted y su hijo(a). También vamos a medir su altura y peso y pedir información sobre la altura y el peso de su hijo(a). La entrevista completa tendrá una duración de aproximadamente 60 minutos.

¿Cuáles son los riesgos y las inconveniencias de participar en esta investigación?
Creemos que no existen riesgos conocidos asociados con participar en esta investigación. Sin embargo, un posible inconveniente puede ser el tiempo que se tarde para completar el estudio.
¿Cuáles son los beneficios de participar en ésta investigación?
Usted no se beneficiará directamente de esta investigación. Sin embargo, esperamos que su participación en el estudio pueda informar los esfuerzos educativos para ayudar a los futuros padres a alimentar a sus hijos(as) pequeños.

¿Recibiré algún tipo de pago por mi participación? ¿Existe algún costo por participar?
No hay costos para participar en este estudio, además del tiempo que usted invierta en participar. Como agradecimiento por su participación cada persona entrevistada recibirá una tarjeta de regalo de $20 en el final de la entrevista.

¿Cómo se protegerá mi información personal?
Los siguientes procedimientos se utilizarán para proteger la confidencialidad de sus datos. El entrevistador le asignará un número basándose en la ubicación de la entrevista, el orden de su participación y la fecha en la que usted participó. Ningún nombre u otra información de identificación serán utilizada o registrada durante el estudio. Las cintas de audio se descargarán de una grabadora digital y serán guardadas en una computadora protegida con contraseña en la sala 225 del edificio Roy E. Jones y serán transcritas para encontrar temas en las respuestas a las preguntas. Ningún nombre será incluido en las transcripciones.

Todos los documentos se almacenarán en un archivero con candado en la sala 225 del Edificio Roy Jones, en Storrs, CT. Los datos se introducirán en una computadora propiedad de la Universidad de Connecticut, utilizada sólo por los miembros del laboratorio de investigación y está protegida por contraseña. Cualquier equipo que tenga estos archivos estará protegido con contraseña para evitar el acceso de usuarios no autorizados. Al terminar éste estudio, los investigadores pueden publicar sus hallazgos. La información se presentará en formato de resumen y los individuos no serán identificados en ninguna publicación o presentación.

También debe saber que la Oficina de Revisión Institucional de la Universidad de Connecticut (IRB) y los Servicios de Cumplimiento de Investigación pueden inspeccionar los registros del estudio como parte de su programa de auditoría, pero estas revisiones sólo se centrará en los investigadores y no en sus respuestas o participación. El IRB es un grupo de personas que revisan los estudios de investigación para proteger los derechos y el bienestar de los participantes en la investigación.

¿Puedo dejar de participar en el estudio y cuáles son mis derechos?
Usted no tiene que participar en este estudio si no lo desea. Si acepta participar en el estudio pero luego cambia de opinión, puede retirarse en cualquier momento. No hay sanciones o consecuencias de cualquier tipo si usted decide que no desea participar. Usted no tiene que responder a cualquier pregunta que no quiera contestar. Si se niega a responder a una pregunta, la pregunta se omitirá y se procederá con la siguiente pregunta.

¿A quién debo contactar si tengo preguntas acerca de este estudio?
Tómese todo el tiempo que desee antes de tomar una decisión. Estamos dispuestos a responder a cualquier pregunta que tenga acerca de este estudio. Si tiene preguntas adicionales sobre este proyecto o si tiene un problema relacionado con la investigación, puede comunicarse con la
Appendix I: Parent Demographic Questionnaire for Interviews with Parents

1. What programs are you or your child(ren) eligible for? (check all that apply)
   - SNAP/Food Stamps/EBT (1)
   - WIC (2)
   - Head Start (3)
   - Husky Health Insurance (Connecticut) (4)
   - Other (5) ________________________

2. What is your zip code? ______________

3. What is your gender?
   - Male (1)
   - Female (2)

4. What is the highest level of education you received?
   - Less than high school (1)
   - High school diploma or GED (2)
   - Some college or Technical school (3)
   - Associate’s degree (4)
   - Bachelor’s degree or more (5)

5. Do you consider yourself to be Hispanic or Latino?
   - No (1)
   - Yes (2)

6. What race do you consider yourself to be?
   - White (1)
   - Black or African American (2)
   - American Indian or Alaska Native (3)
   - Native Hawaiian or other Pacific Islander (4)
   - Asian (5)
   - Other (please explain) (6): ________________________________
7. How many children do you have? _____

8. What are the ages of your children?
   - Child 1 age: _______________________________
   - Child 2 age: _______________________________
   - Child 3 age: _______________________________
   - Child 4 age: _______________________________
   - Child 5 age: _______________________________
   - Child 6 age: _______________________________
   - Child 7 age: _______________________________
   - Other children: ____________________________

9. What is your age? ___________ Years

10. What is your marital status?
    □ Single, never married (1)
    □ Living with Partner (2)
    □ Married (3)
    □ Divorced (4)
    □ Widowed (5)
    □ Other (please explain) (6): ________________________________

11. What is your employment status?
    □ Stay-at-home Parent
    □ Employed part time
    □ Employed full time
    □ Not employed

12. How many people currently live in your household (most of the time)?
    □ Adults: ______
    □ Children: ______

13. How much time do you spend with your child(ren) during a typical week day?
    □ 0 – 1 hour (1)
    □ 2 – 3 hours (2)
    □ 4 – 5 hours (3)
    □ 6 or more hours (4)

14. How much time do you spend with your child(ren) during a typical weekend day?
15. Are you the person who does most of the **shopping** for food in your family? (If you split this task 50/50 with another person, please check “yes”).

☐ Yes (1)
☐ No (2)
☐ I don’t know (3)

16. Are you the person who does most of the **cooking** for your family? (If you split this task 50/50 with another person, please check “yes”).

☐ Yes (1)
☐ No (2)
☐ I don’t know (3)

17. During the past 7 days, how many times did at least one adult at home and your child eat dinner together?

☐ ____ times
☐ Never (2)
☐ I don’t know (3)

18. Do you or any of your children have a food allergy, food intolerance or inability to eat or drink any certain foods or beverages?

☐ No
☐ Yes
   If yes, please explain:_________________________________________________________________

THANK YOU!! --- Please STOP Here

<table>
<thead>
<tr>
<th>Measurements – taken by program team</th>
</tr>
</thead>
</table>

Parent/caregiver

105
Reported or Measured

Age:
Weight (lbs):
Height (inches):
Body Mass Index (BMI):

Child
Reported or Measured (Date of measurement):
Gender:
Month/Year of Birth:
Weight (lbs):
Height (inches):
BMI percentile:

Additional Children (between ages of 0 and 2 years) if applicable

Child 2
Reported or Measured (Date of measurement):
Gender:
Month/Year of Birth:
Weight (lbs):
Height (inches):
BMI percentile:

Child 3
Reported or Measured (Date of measurement):
Gender

Month/Year of Birth:

Weight (lbs):

Height (inches):

BMI percentile:
Appendix J: Interview Script for Interviews with Parents

Interview question guide:

7. Introductory questions:
   a. How many children do you have and what are their ages (ask in years and months)?
   
   b. Who helps take care of your child/baby (inside or outside the home)?
   
   c. What is your favorite thing to do with your child/baby?

8. What is mealtime typically like with your child/baby? (prompts: where is the meal, who does the feeding, who else is there, how long does it last, scheduled or on demand, any TV or music on)

9. Let’s talk about how you feed your child/baby.
   a. How do you decide when to feed your child?
   
   b. How do you decide what foods and beverages to feed your child?
   
   c. How do you decide how much to feed your child?

   d. Breastfeeding specific (reword if father or other caregiver is answering):
      i. Do you currently or did you ever breastfeed your child?
      
      ii. How did you decide whether or not to breastfeed?
      
      iii. [If no]: If you didn’t breastfeed, what were some of the reasons why you didn’t? {go to question 3e.}
      
      iv. If you did breastfeed, how long did you breastfeed?
      
      v. What helped you with breastfeeding (prompts: other people, information etc)?
         What reasons if any, made it difficult to breastfeed or breastfeed longer?
vi. Did your child receive any formula even when you were breastfeeding? (Please describe when they received it (child’s age), how often and why.)

e. How old was your child when you first fed him/her something other than formula or breastmilk?
   i. What did you feed them first and why?

   ii. Does your child currently drink cow’s milk? If yes, how old were they when you first gave them cow’s milk? What type of cow’s milk did you first give them and why? Is that different from now?

   1. If no cow’s milk, why not? Are they receiving any other type of milk? If yes, what kind?

f. What are your child’s favorite foods and drinks?

g. What foods will your child not eat?

h. Are there foods or drinks that you don’t give your child?,

   i. At what age & why?

i. What other people (e.g. family) or places (e.g. daycare, restaurant) influence what or how much your child eats or drinks? Please give examples of anything that is helpful in feeding your child and, anything that is not helpful (e.g. giving your child foods or drinks you don’t want him/her to eat or drink).

j. What foods or food related practices do you think you should do but are hard to do?

10. Where did you learn about how to feed your child/baby?
   a. (prompt: Learning by talking with someone, doing what your family did, watching other people, or classes)

   b. What specific people helped you learn more about feeding children? (prompt: doctor, nurse, WIC, mother, sisters, other family members, friends, daycare, media, others)
i. Who/Which were best for you? Why?

ii. Who/Which talked to you but their advice wasn’t helpful? Why?

iii. What websites or apps have been helpful to you related to child feeding?

c. What tips would you give to other parents about feeding their child?

11. Now let’s talk about your child’s activity patterns:
   a. How often does your child watch something on a screen such as TV, DVD/movie, computer, tablet or other? (prompts: what is watched, how long, favorite program/game/show, limits by time/ content/programs/stations)

   b. How often does your child play outside of a high chair, stroller or other item that would keep them strapped in? (prompt: how often, how long, where, with parent, other people who play with child)

12. Now we are going to talk about any needs or wants you may have for child feeding and related information:
   a. What would you like to learn more about as it relates to feeding your child/baby?

   b. How would you like learn more about how to feed your child/baby?

   c. If you had a specific question about how to feed your child/baby, how would you like to get it answered? [prompt: internet, ask doctor, ask mother/sister, app]

   d. Who do you trust the most for info about child feeding? [prompt: internet, doctor, family member, friend, other]

13. The purpose of this interview was to help us figure out what information parents/caregivers of babies and toddlers would like to learn about child feeding and how we could help them get it. Is there something else you think we should know?
Appendix K: IRB Exemption for Message Testing Interviews

DATE: June 9, 2017
TO: Amy Mobley, Ph.D.
Nutritional Sciences
FROM: Jaci L. VanHeest, Ph.D. Chair, Institutional Review Board
FWA# 0007125
RE: Exemption #X17-095: “Child Feeding Messages Review with Parents of Young Children”
Please refer to the Exemption# in all future correspondence with the IRB.
Funding Source: Child Health and Development Institute of Connecticut
Approved on: June 9, 2017

The Institutional Review Board (IRB) reviewed the “Request for Exemption” for the research study referenced above. According to the information provided, the IRB determined that this research is exempt from continuing IRB review under 45 CFR 46.101(b)(2): Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation. Enclosed please find the validated information sheet. An approved, validated information sheet (with the IRB’s stamp) must be used to consent each online survey participant.

As part of the review and approval process, the IRB conducted an analysis of the grant application and the submitted IRB protocol to verify congruence. The IRB’s review ensured that all research described in the grant application is entirely consistent with the corresponding protocol submitted to the IRB.

All investigators at the University of Connecticut are responsible for complying with the attached IRB “Responsibilities of Research Investigators”.

Any proposed changes that may affect the exempt status of the research study must be submitted to the IRB for review and approval prior to their implementation.
Appendix L: Flyer for Message Testing Interviews Recruitment

Parent Volunteers Wanted for a Research Study

Feeding messages for parents of young children

We are conducting one-on-one interviews to talk to parents with children ages 0 to 2 years old about feeding messages. A one-time, 60 minute interview will be conducted with each parent at a convenient community site.

- Each parent will be interviewed separately about their opinions related to several child feeding messages. Parents will view each message separately and will be asked several questions about each one.
- Who is eligible?
  - Parents (18 years and older) with at least 1 child between the ages of 0 and 2 years old living in Connecticut
  - Able to speak and read English
  - Responsible for feeding their child at least half of the time

There may not be a direct benefit from this research. However, we hope that the interviews will help us improve child feeding messages and educational materials for parents of young children.

Each parent will each receive a $20 gift card after the interview.

To learn more about this project, please contact the Community Nutrition Research Office at the University of Connecticut at amy.mobley@uconn.edu or 860-486-3681.
Appendix M: Information Sheet for Message Testing Interviews

Information Sheet for Participation in a Research Study

Principal Investigator: Amy R. Mobley, PhD, RD
Study Title: Child Feeding Messages Review with Parents of Young Children
Sponsor: Child Health and Development Institute of Connecticut, Inc.

Introduction
You are invited to participate in a research study to evaluate messages about feeding young children. You are being asked to participate because you are a parent of a child ages 0 to 2 years old.

Why is this study being done?
The purpose of this research study is to determine how clear, feasible, useful and important certain messages about child feeding are for parents of young children. The final messages will be used in education materials for parents.

What are the study procedures? What will I be asked to do?
If you agree to take part in this study, you will be asked to review up to 12 different messages related to feeding young children. During a one-time 60 minute interview at a community site convenient to you, a researcher will ask you several questions about what you think about each message. Another research assistant will take notes about what you say. You will also be asked to fill out a short questionnaire about yourself and your child(ren).

What are the risks or inconveniences of the study?
We believe there are no known risks associated with this research study; however, a possible inconvenience may be the time it takes to complete the study.

What are the benefits of the study?
You may not directly benefit from this research. However, we hope that your participation in the study may improve messages and education about feeding young children.

Will I receive payment for participation? Are there costs to participate?
There are no costs to participate besides the time involved. At the end of the interview, you will receive a $20 gift card for your time.

How will my personal information be protected?
The following procedures will be used to protect the confidentiality of the data collected from you. You will be assigned a number by the interviewer based on location of interview, order of participation and the date in which you participated. No names or other identifiable information will be used or recorded during the study.

UCONN IRB
Approved On: 1/9/17
Page 1 of 2

113
All documents will be stored in a locked file cabinet in room 225 of the Roy Jones Building, Storrs, CT. Data will be entered on a University-owned computer used only by the research lab members and is password protected. Any computers hosting such files will be password protected to prevent access by unauthorized users. At the conclusion of this study, the researchers may publish their findings. Information will be presented in summary format and individuals will not be identified in any publications or presentations. We will do our best to protect the confidentiality of the information we gather from you but we cannot guarantee it 100%.

If, during the course of this research study, a UConn employee suspects that a minor (under the age of 18) has been abused, neglected, or placed at imminent risk of serious harm, it will be reported directly to the Department of Children and Families (DCF) or a law enforcement agency.

You should also know that the UConn Institutional Review Board (IRB) and Research Compliance Services may inspect study records as part of its auditing program, but these reviews will only focus on the researchers and not on your responses or involvement. The IRB is a group of people who review research studies to protect the rights and welfare of research participants.

**Can I stop being in the study and what are my rights?**

You do not have to be in this study if you do not want to. If you agree to be in the study, but later change your mind, you may drop out at any time. There are no penalties of any kind if you decide that you do not want to participate. You do not have to answer any question that you do not want to answer.

**Whom do I contact if I have questions about the study?**

Take as long as you like before you make a decision. We will be happy to answer any question you have about this study. If you have further questions about this study or if you have a research-related problem, you may contact the principal investigator, Dr. Amy Mohley at 860-486-5073 or amy.mohley@uconn.edu. If you have any questions concerning your rights as a research participant, you may contact the UConn IRB at 860-486-8802.
Appendix N: Parent Demographic Questionnaire for Message Testing Interviews

1. What programs are you or your child(ren) eligible for? (check all that apply)
   - □ SNAP/Food Stamps/EBT (1)
   - □ WIC (2)
   - □ Head Start (3)
   - □ Husky Health Insurance (Connecticut) (4)
   - □ Other (5) ________________________

2. What is your zip code? __________

3. What is your gender?
   - □ Male (1)
   - □ Female (2)

4. What is the highest level of education you received?
   - □ Less than high school (1)
   - □ High school diploma or GED (2)
   - □ Some college or Technical school (3)
   - □ Associate’s degree (4)
   - □ Bachelor’s degree or more (5)

5. Do you consider yourself to be Hispanic or Latino?
   - □ No (1)
   - □ Yes (2)

6. What race do you consider yourself to be?
   - □ White (1)
   - □ Black or African American (2)
   - □ American Indian or Alaska Native (3)
   - □ Native Hawaiian or other Pacific Islander (4)
   - □ Asian (5)
   - □ Other (please explain) (6): __________________________________________

7. How many children do you have? _____

115
8. What are the ages of your children?
   Child 1 age:  
   Child 2 age:  
   Child 3 age:  
   Child 4 age:  
   Child 5 age:  
   Child 6 age:  
   Child 7 age:  
   Other children:

9. What is your age? _________ Years

10. What is your marital status?
   □ Single, never married (1)
   □ Living with Partner (2)
   □ Married (3)
   □ Divorced (4)
   □ Widowed (5)
   □ Other (please explain) (6): __________________________________________

11. What is your employment status?
   □ Stay-at-home Parent (1)
   □ Employed part time (2)
   □ Employed full time (3)
   □ Not employed (4)

12. How do you prefer to receive information about feeding your child?
   □ Paper handouts or books (1)
   □ Internet/Websites (2)
   □ Media (television, radio) (3)
   □ Social media (such as Facebook) (4)
   □ Videos (DVD or online such as YouTube) (5)
   □ Other (please explain) (6):

13. Who do you prefer to receive child feeding information from?
   □ Other parents (1)
   □ Family members (2)
   □ Friends (3)
   □ Doctor (4)
   □ Other (please explain) (5):
Appendix O: Interview Script for Message Testing Interviews

Child Feeding Message Pre-Testing Script

Thank you for your willingness to provide your opinions about some messages related to feeding young children. Over this next hour, we will be showing you different messages and asking you several questions about each one. There are no right or wrong answers. Our goal is to provide helpful information to parents with young children about feeding. If you have no questions, we will get started.

[Comprehension]
1. What do you think this message is telling you to do?
2. What words or sentences are difficult to read/understand?

[Feasibility/Motivation/Believability]
3. How easy or hard is this message to do? [then ask parent to provide rank with 1 being easiest and 10 being hardest]
4. How likely would you be to use the message if it applied to your child? [then ask parent to provide rank from 1 being very likely to 10 being very unlikely]
5. How much do you believe this message? [then ask parent to provide rank from 1 being most believable to 10 being least believable]

[Relevance/Importance]
6. What new information did you learn?
7. How important is this message to you? [then ask parent to provide rank from 1 to being very important to 10 being least important]
8. What type of people should read/see this message/material?

[Attractiveness/Acceptance/Improvement]
9. What’s the first thing that caught your attention?
10. What do you like best about the message/material?
11. How should the message/words or pictures be changed?
Appendix P: Final Message Sheets in English

Feeding Your Baby

0–6 months

For the first 6 months, your baby only needs breast milk or iron-fortified formula.

- Breast milk or formula should be the only foods fed in a bottle if you use a bottle to feed your baby.
- Don’t put your baby to sleep with a bottle or prop a bottle while feeding. This can cause cavities later or cause your baby to eat too much.

0–12 months

Your baby may be ready for solid foods between 4 and 6 months if they are able to:
- sit well with little support
- have good head control, and
- match and swallow.

Your baby may NOT be ready for solid food if they:
- push solid food out with their tongue or
- gag when a spoon or food is placed in their mouth.

When your baby is ready to eat solid foods:
- You can give 1 to 2 teaspoons of iron and zinc-fortified baby cereals OR 1 to 2 ounces of pureed or mashed meats per day as first foods.
- There is no order for other solid foods, but the earlier vegetables are given, the more likely your baby will eat them.

1 ounce = golf ball size amount of food

Feeding Your Baby

6–12 months

Between 6 and 11 months, your baby may eat every two to three hours. This is about five or six times per day.

- In addition to 8 to 10 ounces of breast milk or iron-fortified formula at each meal, you can give your baby:
  - Up to 2 tablespoons of vegetables and/or fruit
  - 4 tablespoons of protein foods (meat, fish, poultry, eggs, cooked dry beans or peas)
  - OR: dry baby foods such as cottage cheese (upto 1 ounce) or cheese (upto 2 ounces) or plain yogurt (upto 6 ounces)

AND

- OR: Up to 4 teaspoons of iron-fortified infant cereal

Do NOT give your baby the following before he/she turns 1 year old:

- Honey - it can cause an illness called botulism
- Fruit juice or any sweetened beverages (fruit drinks, flavored drinks, sports drinks, sweet tea or others) - these have extra calories with low nutrition and may cause cavities
- Cow’s milk - it may cause bleeding in the gut
- Plant-based milk drinks (soy, rice, or almond milk) or flavored milk powder - these are not designed to meet your baby’s nutrition needs
- Nuts, grapes, popcorn, hot dogs, or hard candy – these can cause choking
Feeding Your Baby
6–12 months

Give your baby a variety of food made in different ways. Include foods from all groups (vegetables, fruit, grains, meat/protein, dairy).

- When giving a new vegetable, try to mix it first with a familiar food such as instant milk, formula or cereal. This can help your baby learn to like vegetables.
- Between 6 and 8 months, first give your baby pureed or mashed food and then lumpy foods or soft finger foods.
- Between 11 and 12 months, your baby can start eating minced, chopped and hard finger foods. Encourage your baby to self-feed as soon as he/she is ready.

Feeding Your Baby
6–12 months

Be patient when offering a new food.

- Do not give up if your baby doesn’t want the food the first time you offer it. It may take 15 to 20 tries before your baby learns to like a new food.
- Some babies make “faces” that look like they do not like a new food. This is a normal part of learning to like new food. This does not mean your baby will dislike the food. Be patient and keep trying.

Feeding Your Child
1–2 years

Picky eating is very common among toddlers. Sometimes they start refusing food that they once liked.

- Be patient and keep regular meal and snack routines. Provide a variety of healthy foods. Encourage your child to try new foods and accept foods they used to like.
- Involve your child in selecting and preparing foods. They may be more likely to eat them.

Feeding Your Child
1–2 years

Allow your child to decide how much to eat and if they want to eat.

As a parent, you decide what, when and where your child will eat.

- Do not force your child to eat a food or finish what is on their plate.
- Do not use food or other things as a reward (promising dessert or a toy for eating vegetables). This may cause your child to not like some foods or to eat more than they need.
**Feeding Your Baby**

6-12 months

- Encourage your baby to self-feed.
- Babies like to use their hands to explore food. Let your child smell, lick, touch and play with new foods. Although it is messy, it allows your child to learn to like healthy food.

- Switch your baby from a bottle to a cup between 6 and 12 months.
- At around 6 months, you can use a baby spoon to give your baby pureed food. You can also give your baby water in a sippy cup.
- At around 9 months, your baby will start to try to spoon food herself and will be able to drink from a cup with less spillage.
- By 12 months, your baby should be able to spoon feed herself and hold a cup with both hands.

**Feeding Your Child**

1-2 years

- Aim to have family meals together by the time your child is 1 year old. Family meals help form healthy eating habits and have other benefits.
- Toddlers need three meals and two to three healthy snacks at regular times each day.
- Eat with your toddler and let him/her be part of family meals.
- Turn off the TV and other electronics during meal-time.

**Feeding Your Baby**

0-12 months

- Peanut Information for your Baby:
  - You can give your baby foods made with peanuts depending on his/her risk of food allergies.
  - This depends on if your child has eczema (skin condition).
  - Ask your child’s doctor if you are unsure.
  - Peanuts or nuts by themselves are a choking risk. They should not be given to a baby.

- Whey peanut butter is given, it should be smooth (no peanuts or chunky).
- It should also be mixed with a purée or given with another food to avoid choking.

**Feeding Your Baby**

0-12 months

- Some foods such as dairy*, food with peanuts, eggs, soy, wheat, fish and shellfish may cause allergies.

- These can be given to your baby one at a time after he/she has started eating solid food with no problems (after 4-6 months of age).
- If you or the baby’s other parent has a food allergy, talk to a doctor about any steps you need to take before giving any of these foods.
- The first taste of these foods should be at home. If no reaction occurs, you can increase the amount of one new food every 3 to 5 days.
- Seek medical care right away if your child has signs of a food allergy. The signs may be a skin rash, trouble breathing, nausea, vomiting or loose stools after eating.

* Cow’s milk should not be given until after age 1.
Feeding Your Child

Plan meals and snacks to provide a variety of healthy food from all food groups for your toddler:

- **Dairy:** Give your child a variety of dairy foods including softened, whole cow’s milk in a cup between the ages of 1 and 2 years old. Offer 1/2 cup of milk at each meal and snack. Plain yogurt (1/2 to 1 cup) can be given in place of milk during meal or snack times.

- **Fruit:** Give a variety of fruit of different colors. Give your child 1/2 to 1/2 cups at each meal or snack.

- **Vegetables:** Give a variety of vegetables, especially dark green, red and orange. These vegetables are high in vitamins and minerals not found in other foods. Give 1/2 to 1/2 cups at meal meals or snacks.

- **Meat/Poultry:** Provide a variety of meat and protein options such as chicken, turkey, fish, meat and beans, lentils or tofu. Give 1/2 to 1/2 ounces at meals and snacks. Avoid processed foods high in salt such as ham, lunch meats, chicken nuggets or fish sticks.

- **Grains:** Give your child whole grain foods such as whole grain bread, whole grain cereal, whole wheat pasta, whole grain tortillas or brown rice. Give 1/2 to 1/2 slice of whole grain bread or 1/2 to 1/2 cup of whole grain cereal or pasta at most meals or snacks.
References


Gidding, S. S., Dennison, B. A., Birch, L. L., Daniels, S. R., Gillman, M. W., Gilman, M. W., …


Hales, C. M., Carroll, M. D., Fryar, C. D., & Ogden, C. L. (2017). *Prevalence of Obesity Among...


intervention is associated with healthier patterns of dietary exposures in infants. *Obesity (Silver Spring, Md.),* 25(1), 185–191. https://doi.org/10.1002/oby.21705


