Spring 5-15-2020

PREVENTING CHILDHOOD OBESITY WITH INCREASED EDUCATION ON RESPONSIVE FEEDING PRACTICES IN PARENTS OF NEWBORNS IN A COMMUNITY HEALTH CENTER

Heather Burns
Pittsburg State University, hburns@gus.pittstate.edu

PREVENTING CHILDHOOD OBESITY WITH INCREASED EDUCATION ON RESPONSIVE FEEDING PRACTICES IN PARENTS OF NEWBORNS IN A COMMUNITY HEALTH CENTER

A Scholarly Project Submitted to the Graduate School
in Partial Fulfillment of the Requirements
for the Degree of
Doctor of Nursing Practice

Heather Dawn Burns

Pittsburg State University

Pittsburg, Kansas

May, 2020

PREVENTING CHILDHOOD OBESITY WITH INCREASED EDUCATION ON RESPONSIVE FEEDING PRACTICES IN PARENTS OF NEWBORNS IN A COMMUNITY HEALTH CENTER

Heather D. Burns

APPROVED:

DNP Scholarly Project Advisor _____
Dr. Kristi Frisbee, School of Nursing

Committee Member_____
Dr. Trina Larery, School of Nursing

Committee Member_____
Dr. Shawnee Hendershot, Department of Family and Consumer Sciences

PREVENTING CHILDHOOD OBESITY WITH INCREASED EDUCATION OF RESPONSIVE FEEDING PRACTICES IN PARENTS OF NEWBORNS IN A COMMUNITY HEALTH CENTER

An Abstract of the Scholarly Project by
Heather D. Burns

This project sought to increase healthcare providers' responsive feeding education to parents of newborns at a community health center in Southeast Kansas. An educational offering was held for participating providers who provided health services throughout infancy. The offering reviewed the projects' methodology, instruments, and intervention to increase responsive feeding education. Parents of newborns who met the inclusion criteria and who presented for an initial newborn visit with their healthcare provider were invited to participate. Parents completed surveys prior to receiving education at the initial appointment and then a follow-up survey at the infant's two-month well child appointment to analyze parental feeding style beliefs and behaviors.

The project's findings indicated that not all parents receive education on responsive feeding prior to their initial appointment despite current responsive feeding guidelines, and there was a high degree of mobility in the population. Future projects may seek to analyze feeding education in birthing centers and programs that incorporate care to newborns and infants.

Healthcare providers' current practice of educating parents on responsive feeding were low prior to implementing the project's methodology which increased parental education on responsive feeding. The only significant change to pre and post parental feeding styles was an increase in restrictive and indulgent feeding behaviors at the two-month follow up. No significant change was found among the other styles. Higher beliefs

of Laissez-Faire style were correlated to decreased weight gain in infants at their follow up compared to other feeding styles. No significant change was found at follow up with an already high agreement on responsive feeding style among parents. The project's findings indicated that parents of newborns need more education on the importance of feeding styles throughout infancy. Findings further supported a need for more feeding education among healthcare professionals in direct positions providing education to parents of infants. Further research is needed to analyze providers' knowledge of responsive feeding guidelines and the importance and significance that feeding practices play in the prevention of childhood obesity.

Table of Contents

List of Tables

List of Figures

Chapter I

Introduction

Childhood obesity is an epidemic in the United States, with more than one in three children being overweight or obese (Gentile et al., 2016). Once obesity has become a problem, it is difficult to reverse, especially as children and adolescents grow older and become adults. Children that are overweight are shown to be twice as likely, compared to children that are normal weight, to become overweight as adults (Reed, Cygan, Lui, & Mullen, 2016). As obesity moves from childhood into adulthood, it is even harder to successfully treat this condition (Dev, McBride, Fiese, Jones, & Hyunkeun, 2013).

In addition to more than one third of children and adolescents in the United States being considered overweight or obese, in 2010, more than 40 million preschool aged children were projected to be affected on a global scale (Kelsey, Zaepfel, Bjornstad, & Nadeau, 2014). The prevalence of this childhood obesity epidemic shows to be a recent and sudden occurrence according to Von Hippel and Nahhas (2013). From the years of 1930 through 1970, the occurrence of obesity was low. Obesity in both boys and girls was first noticed in 1988. By 1993, the obesity rates increased from 0% to 14% among boys, and from 2% to 12% among girls (Von Hippel, & Nahhas, 2013). With obesity being a "recent" phenomenon, there may be hope to reverse it in the future (Von Hippel & Nahhas, 2013, p. 4). This makes understanding and identifying obesity risk factors as

early as possible a priority for health care providers so that appropriate obesity prevention interventions can be initiated as quickly as possible to prevent obesity from ever occurring.

To combat childhood obesity as a public health concern and the negative consequences that can accompany it, a better understanding of the issue is necessary. This chapter will focus on thoroughly describing childhood obesity as a clinical problem and its significance to nursing and the healthcare system; the purpose of the project; the theoretical framework guiding this project; questions this project will aim to answer; key term definitions; and using a logic model to describe the relationship between the project concepts.

Description of the Clinical Problem

As a public health concern for both childhood and adulthood, obesity is strongly associated with several identified adverse health effects. Evidence supports that obesity is related to metabolic disturbances that can lead to additional chronic diseases (Gentile et al., 2016). Obesity strongly raises the risk of diseases and health conditions such as Type 2 diabetes, high blood pressure, dyslipidemia, coronary heart disease, stroke, certain cancers, gallbladder disease, osteoarthritis, mental illness, sleep apnea and breathing problems (Centers for Disease Control and Prevention [CDC], 2018a). In childhood specifically, being overweight or obese increases the risk of health issues including Type 2 diabetes, asthma, and musculoskeletal problems on top of the increased risk that obesity will follow the child into adulthood (Anderson, Hayes, & Chock, 2014). Even more concerning is obesity-associated disorders, such as dyslipidemia, hypertension, non-alcoholic fatty liver disease, poly cystic ovarian syndrome, and Type 2 diabetes that were

previously “only found in older adults, are now seen commonly in children, especially during adolescence” (Kelsey, Zaepfel, Bjornsta, & Nadeau ,2014, p. 223).

Childhood obesity has been shown to not only negatively affect physical health, but negative social and emotional health impacts are also seen in this vulnerable age group. Children who are obese are found to be bullied and teased more compared to their normal weight peers, increasing their risk of suffering from social isolation, depression, and lower self-esteem (CDC, 2017). Stigma is widely driven into the North American culture related to obesity and includes negative traits such as laziness, lack of self-control in addition to the direct teasing, bullying, and social isolation that can result from obesity. This is shown to indirectly influence obese individuals to have reduced education, career, and economic opportunities throughout their lifetime (Brewis, SturtzSreetharan, & Wutich, 2018). These devastating effects on the individual and the decreased quality of life that is demonstrated throughout all areas of a person’s health demands attention to this global epidemic.

The United States Preventive Services Task Force (USPSTF, 2015) recommended that annual obesity screenings should be performed for children over the age of two years. In children under the age of two, measurement of weight-for-length is often used to determine excess weight. According to Ogden, Carroll, Kit, and Flegal (2014) data analyzed from the 2011-2012 National Health and Nutrition Examination Survey (NHANES) found 8.1 percent of infants and toddlers in the US had a high weight for recumbent length.

Parents heavily influence which food preferences and intake patterns their child will develop, especially within the critical first few years. The parenting style sets the

emotional framework of how parents will interact with their children while feeding practices chosen by the parent will directly influence how their child is eating (Shloin, Edelson, Martin, & Hetherington, 2015).While nutritional intake is indeed an important component of obesity prevention and overall good health, how parents and caregivers are incorporating nutrition into the lives of their children and the feeding practices used starting as early as birth are shown to have potential lifelong impacts on the child. If parental feeding practices are not completely causative for a child's weight status, it is found to be strongly associated with body weight and food choices throughout childhood (Clark, Goyder, Bissell, Blank, & Peters, 2007). Experts have concluded that feeding practices are a key factor for obesity prevention, especially within the critical time of the first two years of life when rapid development of food preferences, dietary patterns, and obesity risks may impact the individual throughout adulthood (Robert Wood Johnson Foundation, 2017).

Interventions that aim at improving feeding practices to promote healthy, nutritious eating habits during the "window of opportunity" from gestation through the first two years of life are showing to be the "key" time to lay a foundation to build upon and that will withstand throughout an individual's lifespan (Robert Wood Johnson Foundation, 2017, p. 15). It is throughout this timeframe that despite humans being born with a preference for sweet and opposition to bitter and sour, which may relate to the initial rejection of certain vegetables, the first 1,000 days of life can be a facilitator to the acceptance of these bitter flavors through repeated exposures (Robert Wood Johnson Foundation, 2017). Responsive parenting and feeding practices help what a child will like

or dislike through the use of familiarization, associative learning, and observational learning (Robert Wood Johnson Foundation, 2017, p. 16).

Not only are parents and caregivers teaching children how to eat but they are also influencing other behaviors that affect feeding practices including the child's active play, time spent in front of electronic screens, soothing techniques, sleep habits, and sleep duration (Robert Wood Johnson Foundation, 2017). Xu, Wen, Hardy, and Rissel (2016) showed that increased screen time was associated with lower levels of physical activity such as less tummy time, shorter duration of sleep, and later bedtimes. Therefore, it is important to help strengthen the skills and parenting practices that are shown to reduce obesity as early as possible in a child's life. Instilling these healthful behaviors from birth will potentially not only make a positive impact in the first few years of the child's life but continue to make strides throughout the lifelong battle against obesity.

As children grow older, interventions against obesity tend to become less effective (Dattilo et al., 2012). Interventions that are aimed at adjusting what food or the number of calories consumed along with increasing physical activity have shown to have minimal impacts on a child's weight and their adiposity and have shown overall to be ineffective in stopping the prevalence of overweight affecting young children, especially once children have passed infancy and are in their toddler years (Dattilo et al., 2012). Furthermore, obesity prevention efforts that start during school age years have been shown to be "insufficient in addressing this [obesity] epidemic" (Dattilo et al. 2012, p. 2). Interventions to combat childhood obesity must not only be focused on what dietary choices are being provided, but how they are being provided and potentially shaping a

child's eating habits for life. An emphasis must be placed on early intervention to prevent obesity from starting in childhood.

Significance to Nursing and Healthcare

According to the Presidential Commission for the Study of Bioethical Issues (2016), children are considered vulnerable due to their absence of autonomy and ability to make decisions. Vulnerability was described as "a person's inability fully and independently to protect their own interests." (Presidential Commission for the Study of Bioethical Issues, 2016, p. 1). Since infants and young children especially rely solely on their caregivers for nutritional choices and feeding behaviors, it is important that caregivers are appropriately educated on implementing healthy feeding patterns and behaviors before obesogenic behaviors are already developed and carried into later childhood. Protecting children from the debilitating condition of obesity is a priority for healthcare providers across the spectrum. The potential diseases and health complications that obesity wreaks on individuals should pose enough of an impact that prevention measures should be thoroughly sought out. The negative consequences that obesity presents to not only the childhood population, but to society as whole, additionally supports that this is a problem that requires further attention.

In 2008, the cost of medical care in the United States related to obesity was estimated to be $147 billion total, accounting for both direct and indirect costs (CDC, 2018a). Direct costs associated with obesity include preventive, diagnostic, and treatment services related to obesity, for example, laboratory and radiological tests, drug therapy, and surgery (Harvard, 2017). Indirect costs are measured through employee absenteeism from work, decreased productivity of employees while at work, and premature mortality

and disability (CDC, 2018a). With an estimation of healthcare costs related to obesity reaching between $861 and $957 billion by 2030, it is imperative that preventative measures are taken (American Heart Association [AHA], 2016). If something is not done to help combat this problem, health care quality, in addition to the decreased quality of life of affected individuals, may be at an even greater risk.

Purpose and Objectives

This project looks at parental feeding practices and their impact on childhood obesity. The objectives of this project are aimed at preventing childhood obesity through improving responsive feeding practices in parents of newborns. Project objectives include:

1. To examine the perceptions of healthcare providers on the significance of responsive feeding practices used within the first two years of life.
2. To evaluate what education of responsive feeding practices is being given to parents/caregivers of children at birth and throughout the first year of life by healthcare providers.
3. To present education of responsive feeding practices as recommended by current feeding guidelines of infants and toddlers.
4. To increase the child's parent/caregiver's ability to address nutritional status and promote higher levels of well-being, while preventing rapid weight gain, and positively develop behaviors in children that prevent childhood obesity.
5. To evaluate the effect of education on responsive feeding practices and on parental feeding practices used.

6. To evaluate if increased parental education of responsive parenting and feeding practices can improve outcomes related to childhood obesity through a decreased childhood obesity occurrence, and an increase in the development of healthy feeding behaviors.

The evidence supporting the importance of improving feeding practices that parents and caregivers utilize with their children as a promising avenue for obesity prevention in childhood provides a foundation that this project will build upon. Healthcare providers are in prime positions to help accomplish these objectives.

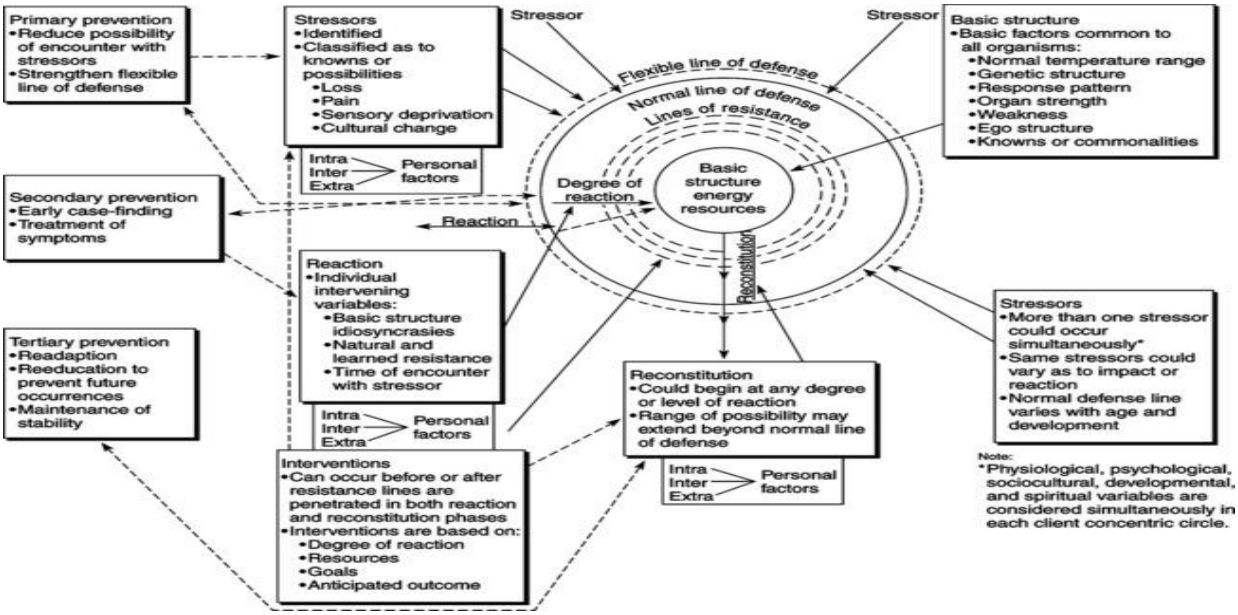
Theoretical and Implementation Frameworks

Theoretical Framework. The theoretical framework that was used to guide this project is the Systems Model developed by Betty Neuman (Figure1) which is a practical, holistic approach that can be an effective guiding framework to combat the obesity epidemic (Gonzalo, 2011). The concept of the Systems Model views the client as an open system that can vary from physiological, psychological, sociocultural, developmental, and spiritual components. The client systems are interacting and responding to the stressors within their environment, showing that energy and information are not only put out from the client, but also being received from the environment (Alligood, 2014). These client systems are protected by lines of resistance. When stressors break through the line of defense, the system becomes invaded, moving that system into illness on the wellness-illness continuum that defines the health of an individual (Gonzalo, 2011). Prevention is viewed as an intervention within this model. Primary prevention is initiated prior to the stressor invading the system.

Children are open systems who react to their environment and to the other individuals within their environment. Neuman's model supports beginning an intervention when a stressor is suspected (Alligood, 2014). By better understanding how obesogenic feeding behaviors can break down the defense line of a child sending them into the illness continuum of obesity, primary prevention can be initiated to develop a healthier environment and system that can help keep the child's system stable and result in optimal wellness.

Figure 1.

Betty Neuman's Systems Model



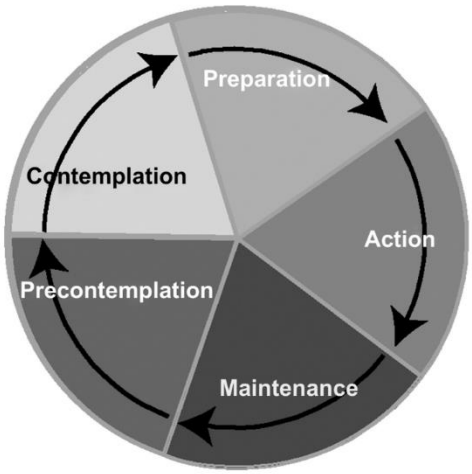
Adapted from Freese & Lawson, 2007.

Implementation Framework. For the plan of implementation, an assessment of the organization's readiness will be conducted using the Transtheoretical Model of Health

Behavior Change (Figure 2) as described by Melynk and Fineout-Overholt (2015). As shown in Figure 2, this theory incorporates five stages of change: precontemplation, contemplation, preparation, action, and maintenance. Although this theory is commonly applied to behavior change in patients, it can also be applied to the organizational level. For individuals who are in the precontemplation and the contemplative stages, the project team would focus on making those individuals feel connected to the project goals and assist them to progress to the next stage of readiness by educating on the evidence-based practice (EBP) changes to help strengthen their beliefs that the changes will promote better patient outcomes and higher quality of patient care. Once those individuals are in the preparation or action stage, the project team can assist them and support them in implementing EBP strategies. Ultimately, all individuals in the practice setting would make it to the action or maintenance stage. Through the use of this model, any barriers that are identified within the environment, leadership, or communication strategies could be addressed to promote environmental readiness of the practice change, and interventions can be initiated accordingly to enhance the facilitation of the plan. Strategies were matched appropriately to the stage an individual or the team is in. This should motivate individuals to progress through the stages resulting in the desired organizational practice change. All individuals of the organization can participate in the practice change plan regarding leadership, provider, or nursing staff positions. Use of the transtheoretical model of health behavior offers that resistance, stress, and time needed to implement the change will diminish (Melnyk & Fineout-Overholt, 2015, p. 324).

Figure 2.

The Stages of the Transtheoretical Model of Health Behavior Change



Adapted from Hahn, 2009, p. S39.

Project Questions

1. Did an educational offering to healthcare providers on responsive feeding practices increase their understanding of the importance of the use of responsive feeding practices in newborns and infants?
2. Did healthcare providers believe more parental education was needed on responsive feeding practices?
3. How frequently did providers educate parents on responsive feeding practices prior to an educational intervention?
4. How important did providers feel responsive feeding practices were to their healthcare practice?
5. How frequently did providers educate parents on responsive feeding practices after an educational intervention?

6. How likely were providers to continue incorporating responsive feeding education into their routine practice to parents of newborns after the project's intervention?
7. How satisfied were providers with responsive feeding education brochures given to parents?
8. What were the demographic characteristics of parents using the community health clinic for healthcare of their newborn?
9. Did educating parents/caregivers about responsive feeding practices change their feeding style beliefs and behaviors?
10. Did increased education of responsive feeding practices correlate to normal infant growth trajectories?

Definition of Key Terms

The following key terms were defined to promote clarity throughout this project.

- Childhood Obesity- "a BMI at or above the 95th percentile for children and teens of the same age and sex" (CDC, 2016).
- Childhood Overweight- "a BMI at or above the 85th percentile and below the 95th percentile for children and teens of the same age and sex" (CDC, 2016).
- High weight for recumbent length- determines excess weight in infants, corresponds to a weight-for-recumbent length "greater or equal to the 95th percentile of the sex-specific weight-for-recumbent length 2000 CDC growth charts" (Fryar, Carroll, & Ogden, 2016).
- Body Mass Index (BMI)- "a person's weight in kilograms divided by the square of height in meters. A high BMI can be an indicator of high body fatness …[and] can be used to screen for weight categories that may lead to

health problems but it is not diagnostic of the body fatness or health of an individual" (CDC, 2018b).

- Responsive Parenting- a parenting style that is meant to foster the development of self-regulation and promote cognitive, social, and emotional development. Self-regulation includes overlapping constructs that can affect feeding behaviors including self-control, willpower, effortful control, delay of gratification, emotional regulation, executive function, and inhibitory control (Robert Wood Johnson Foundation, 2017).
- Responsive Feeding- "a key dimension of responsive parenting involving reciprocity between the child and caregiver during the feeding process. It is grounded upon the following three steps: (1) the child signals hunger and satiety through motor actions, facial expressions, or vocalizations; (2) the caregiver recognizes the cues and responds promptly in a manner that is emotionally supportive, contingent on the signal, and developmentally appropriate; and (3) the child experiences a predictable response to signals" (Robert Wood Johnson Foundation, 2017, p. 6).
- Non responsive feeding- "feeding that is characterized by a lack of reciprocity between the caregiver and the child and can include (a) the caregiver taking control and dominating the feeding situation as reflected in controlling and pressuring behaviors; (b) the child controlling the situation leading to indulgence; or (c) the caregiver being uninvolved and ignoring the child" (Robert Wood Johnson Foundation, 2017, p. 6).

- First 1000 days- “the life course period spanning from conception through two years of age” (Robert Wood Johnson Foundation, 2017, p. 6).
- Newborn- the first 28 days of life. (WHO, 2019a).
- Infant- child under the age of one. (WHO, 2019b)
- Toddler- a child between the ages of 1 and 2. (Farlex, 2003-2019).

Logic Model

This project’s logic model was driven by a forward logic strategy that showed the relationship between the inputs, outputs, and outcomes of the project. The inputs included all the resources that were necessary to implement an intervention that increased the education of responsive feeding practices in parents of newborns. Outputs were divided into the activities that must take place to complete the intervention and what participants were key to the project objectives. Outcomes were divided into short-term, medium-term, and long-term goals of the project.

Inputs, or the resources that were utilized to drive the initiative of this project, included: the time necessary to complete the project, research and evidence-based guidelines to develop the interventions, Pittsburg State University Irene Ransom Bradley School of Nursing, a local community health clinic, and healthcare providers of children at birth. The outputs included: activities of gathering data, developing education material and handouts that were supported by current feeding guidelines of infants, informing healthcare providers of feeding guidelines, and surveying healthcare providers on their perspectives on implementing education based on current guidelines of responsive feeding practices to the parents/caregivers during the neonatal period. Participation was

required from the community health clinic, healthcare providers of newborns and infants, and the Irene Ransom Bradley School of Nursing.

Short-term outcomes for this project increased newborn and infant healthcare providers' awareness of current feeding guidelines. Medium-term outcomes included updated educational handouts for parents that supported current recommendations of feeding guidelines for newborns, and improved education given to parents of newborns on responsive feeding practices. Long-term goals of this project included children would develop healthier eating behaviors and there would be a decreased prevalence of childhood obesity.

Assumptions of this logic model included the following:

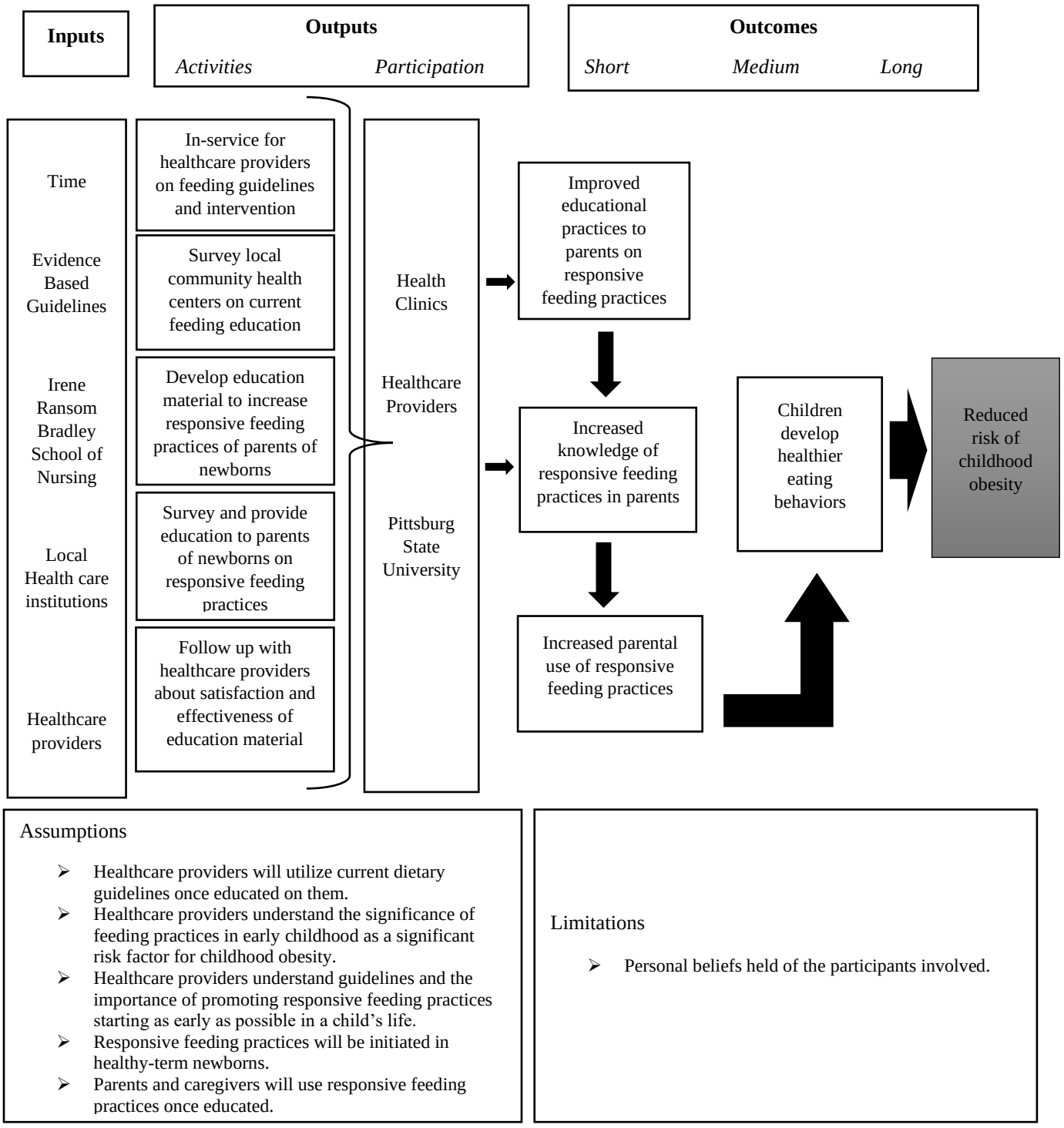
1. Healthcare providers utilized current dietary guidelines once educated on them.
2. Healthcare providers understood the significance of feeding practices in early childhood as a key risk factor for childhood obesity.
3. Healthcare providers understood guidelines and the importance of promoting responsive feeding practices starting as early as possible in a child's life.
4. Responsive feeding practices were initiated in healthy-term newborns.
5. Parents and caregivers used responsive feeding practices once educated.

Limitations are assumed to occur within any intended project. External factors that limited this study included:

1. Personal beliefs held by the participants involved. If personal beliefs conflicted with current guidelines, this would have severely limited the initiation of responsive feeding education and its use at birth.

Figure 2.

Improvement of Responsive Feeding Practices Logic Model



Mission: To develop obesity reducing feeding behaviors in early childhood through increased parental/caregiver use of responsive feeding practices starting at birth.

Summary

Childhood obesity is a continuing problem in the United States. While several risk factors are associated with childhood obesity, there are measures that can be taken to reduce risks from contributing to the adverse outcomes that obesity has shown to wage on the health of the individuals, communities, and the country. Dietary guidelines were released in 2017 and were aimed at the importance of responsive feeding practices in infants and toddlers. The sooner these guidelines are implemented, the sooner infants learn to develop healthful eating behaviors and avoid eating behaviors that are shown to contribute to the obesity epidemic. Earlier initiation of these feeding practices offers hope in the prevention of childhood obesity. A further review of feeding practices in early childhood and their relationship to childhood obesity and how they can make a protective impact during these early years will be reviewed throughout the literature for better understanding the problem at hand.

Chapter II

Review of the Literature

Developing healthy feeding behaviors as early as possible may contribute to obesity prevention and, therefore, it was identified as an important goal for healthcare providers caring for young children. Improving parental education about feeding practices and the relationship between feeding practices and obesity prevention requires a thorough understanding of parental feeding practices. A systematic search of CINALH Plus, PubMed, and ProQuest electronic databases was performed from 2013 to 2019, using the key words Parental Feeding Practices, Responsive Feeding Practices, Early Childhood Obesity Prevention, Rapid Infant Weight Gain, and Interventions. This produced a total of 99 articles which were evaluated according to the criteria of being within the last five years. An analysis was conducted on feeding practices, infant weight gain, and if there were relationships with childhood obesity, of which 39 articles met the inclusion criteria and were identified for review.

This chapter summarizes the key findings on parental feeding practices and feeding practice interventions. A review of the literature will explore risk factors for childhood obesity, factors that influence parental feeding practices, how a child's weight is influenced by parental feeding practices, and how feeding practices in infancy affect weight gain and predisposition to future childhood obesity. A further review of early

childhood interventions that focus on responsive parenting and feeding practices will be reviewed, followed by a critical appraisal of infant feeding guidelines.

Parental Feeding Practices as a Risk Factor for Childhood Obesity

The literature reveals that prevention is critical with the prevailing childhood obesity epidemic. Using an ecological framework, Dev, McBride, Fiese, Jones, and Cho (2013) found that among several identified risk factors that contribute to childhood obesity, parental feeding practices were among the most pressing of risk factors. It is important to examine feeding practices among parents and their children and examine the risks associated with certain practices as they relate to obesity. Since environmental and behavioral factors are more capable of being manipulated to control weight and prevent obesity in children, the early childhood environment provides an ideal setting to incorporate influential eating behaviors that are starting to develop in children during this time. (Boucher, 2014). Further exploration on parental feeding practices will be reviewed as it is supported by the literature.

Influences on Parental Feeding Practices

There are several factors that have been found to influence the feeding practices that parents and caregivers choose to incorporate when feeding children. The factors of parenting style, food insecurity, child temperament, ethnicity and culture, and parental perception can affect what practices parents incorporate during feeding and will further be reviewed.

Parenting Style. While parenting style is not specifically related to feeding practices, its influence cannot be denied. That style includes the values and beliefs that

guide the practices parents communicate to their child (Kiefner-Burmeister, Hoffmann, Zbur, & Musher-Eizenman, 2016). Parenting styles can describe the stability of the attitude that parents use to help their children socialize and become an adult and can range from authoritative, authoritarian, to permissive, indulgent, and even uninvolved styles (Hughes, Power, O'Connor, Fisher, & Chen, 2016; Van der Horst & Sleddens, 2017).

Each style can be determined by the parent's level of responsiveness to the child and their level of demandingness. Van der Horst & Sleddens (2017) defined responsiveness as "how the parents encourage child eating", and defined demandingness as "how much the parent encourages the child to eat in general" (p. 2). Responsiveness during feeding further refers to how the caregiver encourages the child to self-regulate their intake of food, thus allowing the child to determine when they are finished eating and the ability to leave food unfinished if desired (Blaine, et al., 2015). With its presence as a feeding style emerging in the 1990s, responsive feeding is now referred to as a "proven" method to feed children effectively in early childhood (Pallewaththa, Agampodi, Agampodi, & Siribaddana, 2019, p.70). Responsive feeding is shown to help improve a child's ability to learn self-regulation, however, non responsive feeding practices are associated with a child consuming more food than necessary and ultimately having an increased BMI in infants and young children (Blaine et al., 2015).

Authoritarian styles are characterized by the parents' highly demanding nature, with low levels of responsiveness. Authoritarian parents have been found to place more pressure on a child to eat compared to those parenting styles that are less demanding (Van der Horst & Sleddens, 2017). This contrasts with authoritative parenting styles that

incorporate both high levels of demand and responsiveness; permissive styles that are highly responsive but have low demands; and uninvolved parenting styles that are characterized by both low responsiveness and low demands (Van der Horst & Sleddens, 2017). A new parenting style that has emerged from the literature is overprotection, which is characterized by frequent child monitoring of where they are and what they are doing. These behaviors fall outside of the appropriateness for age and is shown to have negative consequences on child development through interfering with development of autonomy, the child's ability to engage in school, and physical activity, especially in children between the ages of seven and 12 years (Van der Horst & Sleddens, 2017). In relation to this topic, an overprotective parenting style has further been found to be associated with being overweight in childhood especially between the ages of 10 and 11 years old (Van der Horst & Sleddens, 2017).

To gain a better understanding of the relationship between maternal feeding styles and a child's eating behavior, Boucher (2014) examined different types of parental feeding styles using a questionnaire that was administered to parents and classified feeding styles as authoritative, authoritarian, indulgent, and uninvolved. Ten "pediatric experts" were used to classify the feeding styles as "healthy" and "unhealthy." (Boucher, 2014, p. 236). The authoritative style was classified as "healthy", where parents used nondirective and supportive behaviors to encourage their child to eat. It was further identified as significantly associated with healthy behaviors in the child, such as the child receiving more rest at night than mothers who did not use an authoritative feeding style, and these children often developed better self-regulating behaviors (Boucher, 2014, p.

236). There was, however, no relationship to the child's BMI found between the "unhealthy" authoritarian and the indulgent feeding styles.

Langer, Seburg, Jaka, Sherwood, and Levy (2017) completed a randomized controlled trial that analyzed general parenting styles and how they were associated with specific feeding practices and their influence on the child's dietary intake. The children in the study were an average of six years of age, and the outcomes included the intake of fruits and vegetables and the consumption of sugar sweetened beverages (SSBs). Permissive parenting was associated with a low intake of fruits and vegetables in the child's diet. Restriction was not found to be associated with the child's dietary intake alone, but it was dependent upon which parenting style accompanied the restriction. Furthermore, restriction was found to be predictive of the intake of SSBs when the parenting style of authoritarianism was involved. When authoritarian parenting styles were involved with the addition of restrictive feeding practices, SSB consumption was lowest in these groups, but if restrictive feeding practices were not accompanied with the authoritarian styles, these groups had the highest SSB consumption among children. Overall, parental monitoring was associated with lower consumption of SSBs by the child (Langer, Seburg, Jaka, Sherwood, & Levy, 2017). Despite any identified associations with BMI and feeding practices, it is well established that diets low in fruits and vegetables and high in SSBs are not supported for healthy eating behaviors across any age group.

The goal to improve responsiveness in feeding practices is set by the Institute of Medicine's (IOM) "Early Childhood Obesity Prevention Policies" (2011) to "create a healthful eating environment that is responsive to children's hunger and fullness cues"

and is noted that it should be "required" by child care providers and educators in the early childhood setting (p. 98). This declaration as a requirement to create a healthy eating environment that responds to the child adds strength to the literature supporting a move to improve responsive feeding practices used by child caregivers.

Food Insecurity. Low socioeconomic status children continue to fuel the growth of the obesity epidemic. (Lee, Andrew, Gebremarian, Lumeng, & Lee, 2014). Lee et al. (2014) focused on determining the relationship of the timeframe that poverty was experienced and the risk of the first incidence of obesity. The first incidence of obesity was observed between the ages of 3 and 15 years, revealing that not only does poverty contribute to obesity, but a child who experienced poverty before age two was "robustly associated" with the first incidence of childhood obesity. Furthermore, a child who does not experience poverty until after the age of two was shown to have the same risk of obesity as a child who did not experience poverty during any of the observed periods (Lee et al., 2014, p. e73). The relationship between early childhood poverty and increased BMI were also shown in a previous study by Wells, Evans, Beavis, and Ong, (2010), where BMI was figured for age percentiles among youths aged 9, 13, and 17. Results showed that early childhood poverty led to accelerated weight gain throughout the course of childhood and into early adulthood. While this study considered the "cumulative risks" that are associated with poverty such as poor housing quality, and family turmoil, future research could explore more explicitly how a life with cumulative risks lead to obesity among adolescents, as it is "well-documented" that early childhood poverty is a risk factor for obesity (Wells et al., 2010, p. 2511).

Food insecurity is an identified factor that is associated with poverty and obesity (Kral, Chittmans, & Moore, 2017). Food insecurity is referred to as a "limited or uncertain availability of nutritionally adequate and safe food or limited or uncertain availability to acquire acceptable foods in socially acceptable ways" (U.S. Department of Agriculture, 2019, "What is Food Insecurity, para. 2). Eighty-eight percent of households in the United States are estimated to suffer from food insecurity (Coleman-Jensen, Rabbitt, Gregory, & Singh, 2015). Children from food insecure homes are five times more likely of being obese compared to children that are from food secure homes and this is shown to influence the feeding practices that parents utilize (Kral et al., 2017).

Child's Temperament. A child's temperament can greatly influence what feeding practices a parent may use. Boles, Reiter-Purtill, and Zeller (2013) conducted a longitudinal study with participants 5 to 19 years of age to assess the interaction between parent and child characteristics with feeding practices and mealtime functioning. The authors concluded that adolescents with persistent obesity were more likely to be parented with problematic feeding practices, especially when the parents felt their child had a difficult temperament (Boles, Reiter-Purtill, & Zeller, 2013). Tate, Trofholz, Rudasil, Neumark-Sztainer, and Berge (2016) found in their cross-sectional study that the risk of being overweight may be related to the child's eating behaviors, particularly if the child is an emotional overeater and has a difficult temperament. Children who were found to be a picky eater with a difficult temperament demonstrated decreased BMI's.

Rollins, Loken, Savage, and Birch (2014) further demonstrated how the effects of restriction may differ based on a child's temperament and that some forms of restriction may be appropriate if the control is shared between the parents and the child. In their

study analyzing preschool children ages three to five years old, Rollins et al. (2014) found that regardless of whether restrictive feeding practices were used, children who had low inhibitory control showed an increase in eating in the absence of hunger (EAH) and increased BMI's, while children who had high inhibitory control were not affected by restrictive practices. Children with low inhibitory control may need more guidance and opportunities to practice self-regulation where the use of restriction does not offer this. Setting limits is shown to have the potential to help develop self-regulation, while controlling practices elicit a negative outcome (Rollins et al., 2014). Limits include how often a food is purchased and, if it is allowed into the home, how much of it may be consumed without forbidding access to it. On the other hand, controlling practices would keep limited snacks completely out of reach, again denying the child the ability to learn to regulate intake and how to set limits (Rollins et al., 2014). These findings suggest further research is necessary to better understand the relationship between the child's temperament, the child's environment, and how parents can help shape an eating environment for children that encourage healthy eating behaviors.

Ethnicity and Cultural Influences. Ethnicity and cultural practices are notable as influencing what feeding practices a parent may choose to incorporate when feeding their child. Lora et al. (2016) examined differences in ethnic groups and found that African American fathers were more likely to have an uninvolved feeding style that was found to allow the child to make more choices out of the child's own desire. This finding was compared to Hispanic fathers who were involved in the study and were found to be more likely to use indulgent feeding styles and use food choices to calm their children (Lora et al., 2016). Bliss and Bennett (2013) found in their study among different ethnic

groups in Germany that black Afro-Caribbean parents used the highest restrictive feeding practices, while white Germans were found to have feeding practices with the lowest pressure to eat. Ma, Zhou, Hu, Liu, and Sheng (2015) found in the Chinese-focused population of their study, that parents in this cultural group were more concerned about a child being underweight even when the child was normal weight, compared to any concern of the child becoming overweight. This concern for being underweight was found even though 32% of the child population in the study was considered overweight (Ma, Zhou, Hu, Liu, & Sheng, 2015).

Despite the previously discussed differences among ethnic groups, Wehrly, Bonilla, Perez, and Liew (2014) found no difference between ethnic groups or their use of restrictive feeding practices. Instead, Wehrly et al. (2014) concluded that greater use of restrictive feeding practices was related to a parent's perception of the child's weight status, and greater use of restriction was used when parents perceived their child as overweight or obese. Since there are differences observed in how feeding practices are incorporated among certain cultural and ethnic groups, this could be another important area for consideration when implementing interventions to improve responsive feeding practices.

Parental Perception of Childhood Obesity. One variable to anticipate when assessing feeding practices among parents is the parent's perception of childhood obesity. How a parent defines a healthy weight and the consequences associated with it are important to consider when identifying obesity risk factors. Parents concerned with their child's weight may be more likely to use restrictive feeding practices to attempt to withhold unhealthy food to prevent weight gain (Swyden et al., 2017). Restriction

influences the types of food a child may eat, but no evidence can support that this is effective. Furthermore, restriction is associated with the parents' concern about their child's weight status, and this behavior is noted to take place more often in older children compared to younger children (Swyden et al., 2017). This is found to be largely related to the parental observation that overweight or obesity in early childhood is not a concern because of their perception and belief that the child will "out-grow" being overweight in later childhood (Davidson & Vigden, 2017; Swyden et al., 2017). While restrictive practices may seem to be a logical solution to parents to help their children achieve a healthy weight status, evidence suggests otherwise. Restrictive feeding practices may lead to unintentional consequences where children will have a stronger desire for the restricted foods, and restriction may alter what foods a child prefers. It may further interrupt the child's natural ability to self-regulate leading to an increased intake of the restricted foods (Swyden et al., 2017; Kienfrer-Burmeister et al., 2016).

A study that examined Mexican American mothers' perceptions regarding childhood obesity, its causes, and consequences, revealed that mothers believed that a healthy weight was important for their child; however, their approaches in how they determined if their child was overweight or obese varied. Many mothers reported they could identify overweightness in their children "just by looking at them," or by the clothing size the child wears (Sosa, Mckyer, Pruitt, Goodson, & Castillo, 2015, p. 36). Several of the mothers interviewed neglected to identify that obesity was, in fact, a childhood problem, which would likely create a lack of concern in addressing this issue (Sosa et al., 2015).

According to Branch et al. (2017), the number of parents able to recognize if their child is overweight is inadequate. In response to this observation Branch et al. (2017) conducted a study to better understand parental concerns of child overweight or obesity. This study found that although over 70% of mothers of overweight or obese children expressed at least some concern about their child's weight status, there was little difference observed in maternal behavior related to this expressed concern. Family meals that were assessed were found to not reflect the current recommendations to prevent obesity (Branch et al., 2017). While it is important that parents can identify that their child is overweight or obese, it is equally important that they know how to establish healthy feeding behaviors through evidence-based recommended feeding practices. Russell et al. (2016) determined the importance of analyzing unique and individualized factors that increase the chance that mothers will utilize healthy behaviors. These key factors included social and environmental opportunities, psychological capability, and motivation. It was further found that a mother's knowledge in addition to her motivation relates to what advice she will take when it comes to infant feeding practices (Branch et al., 2016). While further studies are needed to understand parental perceptions of childhood obesity, it is an essential variable for practitioners to account for when identifying children at risk for obesity.

Feeding Practices' Influence on Child's Weight

Parental feeding practices help to shape a child's eating behavior and are, therefore, recognized as a contributor to child weight status. Childhood obesity is linked to both highly controlling and highly indulgent parenting in both eating and non-eating areas and is thought to affect a child's ability to self-regulate their caloric intake,

increasing their risk of obesity in the future (Power, et al., 2015; Wehrly et al., 2014). According to Dev et al. (2013), the parental feeding practice of restriction for weight control is a significant risk factor for overweight and obesity during preschool age children, and increases the child's risk 1.75 times, compared to parents that do not use controlling feeding practices. Restrictive feeding practices have been shown to have negative impacts on both the child's weight and the child's eating behavior, including an increased preference for the food that is restricted (Afonso et al., 2016; Loth, Friend, Horning, Neumark-Sztainer, & Fulkerson, 2016). This has been shown to have a positive relationship for an increased BMI; however, parental pressure to eat has also been linked with low weight in children (Afonso et al., 2016; Loth et al., 2016). These findings make it clear that a child's weight is influenced by the feeding practices that parents use, and further support the use of feeding practices as an avenue for obesity prevention.

Evidence demonstrates that restrictive feeding practices are associated with eating in the absence of hunger (EAH), another risk factor for the development of obesity. However, some forms of restriction may not hold the negative consequences most of the literature supports (Bauer et al., 2017; Rollins, Loken, Savage, & Birch, 2014). Bauer et al. (2017) conducted a longitudinal study to examine the association between restrictive feeding practices and EAH in children who were 21, 27, and 33 months of age. The findings conflicted with current guidelines that support restrictive feeding practices increase the desire for restricted foods (Bauer, et al., 2017). The results showed that restriction in toddlers did not affect the toddler later with an increased behavior of EAH. It appears that EAH may be difficult for parents to assess, and, therefore, they may not express concern about a toddler overeating and further fail to modify feeding practices.

Food as a Reward. Feeding practices that use food as a reward are found to be associated with negative eating behaviors (Lora, Hubbs-Tain, & Ferris, 2016; Steinsbekk, Belsky, & Wichstrom, 2016). Steinsbekk, Belsky, and Wichstrom (2016) found that parents that used food as a reward when children were six years of age was predictive of a child having increased emotional overeating and food responsiveness; it offered more encouragement to eat, and it predicted a greater enjoyment of food two years later. This encouragement may further promote children to eat regarding environmental prompts rather than paying attention to their internal satiety cues, leading to overindulging. Further concerns lie in the potential that children may be more driven for food as it is sought as a reward. It has been shown that obese mothers are more likely to use food as reward compared to normal weight mothers (Thompson, 2013). Another study supported that fathers score high in using food as a reward (Lora, Hubbs-Tait, Ferris, & Wakefield, 2016). Feeding practices that reward behavior with food is an identified area of concern and in need of further investigation as it relates to childhood obesity.

Feeding Practices in Infancy. Most of the studies that were conducted on parental feeding practices included children of preschool age or school age; however, feeding practices have been found to affect weight status in infancy (Imai, Gunnarsdottir, Thorisdottir, Halldorsson, & Thorsdottir, 2014). A child's mother has "the strongest influence over a young child's eating environment" (Boucher 2014, p. 234). A mother's feeding and activity practices "especially during infancy, may influence their children's perceptions, attitudes, and receptivity to new foods and activities introduced throughout various development phases" (as cited in Sosa, Mckyer, Pruitt, Goodson, & Castillo, 2015, p. 28).

Imai, Gunnarsdottir, Thorisdottir, Halldorsson, and Thorsdottir (2014) conducted a study to assess the association between infant feeding practices utilized at five months of age and BMI at six years of age between exclusively breastfed infants and exclusively formula-fed infants, and the introduction to solid foods at five months. It was found that exclusively breastfed infants grew slower than formula fed infants, especially compared to the formula fed infants that were introduced to solids by five months of age. This was associated with a higher BMI at six years. Factors that were found to predict an earlier introduction to solid foods included young maternal age, low educational level, and shorter breast-feeding duration, categorized as less than four weeks.

Breastfeeding is widely promoted through public health policy in an effort to prevent childhood obesity. The World Health Organization (WHO) (2014) reports the benefits of exclusive breastfeeding as being well-established in preventing disease in the first two years of life, with a large body of evidence supporting even later life protection against diseases such as obesity. However, the United States' national average of infants still being exclusively breastfed at six months of age is 49.4% and only 27% at 12 months (CDC Breastfeeding Report Card, 2014). Breastfeeding until six months of age was shown to help slow Rapid Infant Weight Gain (RIWG), demonstrating a protective effect against the development of increased adiposity (Oddy et al., 2014). In contrast to the public policy support of exclusive breastfeeding in infancy, according to Appleton, et al. (2018), parents that do not choose to breastfeed or are unable to breastfeed report a lack of support and access to resources when formula feeding their infants. Despite the ample evidence that exists on the benefits of breastfeeding, support is still necessary for formula

feeding infants to help establish healthy eating behaviors without discouraging the promotion of breastfeeding. This is an identified area in need of further research.

Rapid Infant Weight Gain and Adiposity. Children with birth weights above the 85th percentile are associated with BMIs at age 11 that are also above the 85th percentile (Shankaran et al., 2011). Being overweight between the ages of two- and four-years correlates to having twice the risk of being overweight at age 11 compared to children that have an average weight between the ages of two and four (Shankaran et al., 2011).

To further understand the development of childhood obesity as it relates to feeding practices in infancy, it is necessary to understand the effect that RIWG has on the development of adiposity. Since "rapid weight gain during infancy significantly increases the risk of later obesity," it is identified as critical to monitor infant weight gain and pay close attention to nutrition during the first 12 months of life (Nader et al., 2012, p. 197). RIWG can be defined as a growth trajectory that crosses at least one percent and is an identified risk factor for later obesity (Wood et al., 2016). Obesity cannot exist without the presence of excess adipose tissue. The WHO (2018) defines obesity as an "abnormal or excessive fat accumulation that may impair health." Once excess adiposity has developed, few non-pharmacological or non-surgical interventions have been found to help with adipose reduction (Braun et al., 2018). One of the best predictors of a child being overweight during school age is the amount of weight gained in the first 24 months of life (Ma et al., 2015). RIWG has a large body of evidence supporting its contribution to obesity.

In the study by Braun et al. (2018), the authors sought to understand how patterns with adiposity were associated with the risk of childhood obesity. Braun et al. (2018) used a prospective cohort study design selecting 215 children where they measured weight and height at the age of four weeks and then again at one, two, three, four, five, and eight years of age. The authors found that the children who were overweight at eight years of age followed the regular weight gain as those children that were normal weight. However, those children who were obese at eight years of age had greater gains in weight, especially within the first two years, supporting that rapid gains in adiposity within the first few years of life increases the risk of obesity later. Oddy et al. (2014) examined the relationship of breastfeeding and the risk of increased adiposity in infancy and adulthood. The authors found that the longer that breastfeeding was carried out the lower the weights of the children.

Zhang et al. (2013) demonstrated results that strongly support a protective effect of exclusive breastfeeding in infancy with an observable reduced risk of overweight and obesity in 47% of the study population at two years of age compared to infants who were not exclusively breastfed. Any type of feeding but exclusive breastfeeding, including mixed feeding of both bottle and breast, did not show any protective effects. This study shows the important role of breastfeeding in preventing childhood obesity.

However, despite the large amount of evidence that supports breastfeeding as protective against the development of obesity, evidence exists that RIWG and overweight infants pose an equal risk for future overweight or obesity in childhood regardless of the method of breastfeeding or formula feeding (Penny, Jimezez, & Marin, 2016; Willik, Vrijkotte, Altenburg, Gademan, & Holthe, 2015). Penny, Jimenez, and Marin (2016)

conducted a longitudinal cohort study that focused on a population where 98.6% of all babies were exclusively breastfed in Peru. The authors sought to determine if RIWG in this population had any relationship to obesity at the age of eight. The findings from their study continue to support that RIWG in infancy is strongly associated with later obesity, despite being breastfed. Willik, Vrijkotte, Altenburg, Gademan, and Holthe (2015) found through their study that overweight infants, whether breastfed or formula fed, have the same four times more likely risk of being overweight at the ages of five and six years.

Wood et al. (2016) recognized that formula-fed infants are noted to be at greater risk for overfeeding and RIWG. Therefore, they sought to study the relationship of whether a difference in the size of the bottle used for feeding infants was found to relate to weight gain in bottle-fed infants. Wood et al. (2016) noted that the relationship between nutrition source and adiposity could be related to several factors, including the formula specifically, feeding behaviors such as a feeding schedule, earlier introduction to complementary foods, parental education, or other socioeconomic factors. It was concluded that using a larger bottle over six ounces was independently contributing to greater weight gain and change in weight to length of six-month old infants within the study (Wood et al., 2016). Using bottles less than six ounces could help to prevent RIWG and later obesity in bottle-fed infants.

Regardless of the feeding method used in infants, when it comes to the development of adiposity and its relation to the development of childhood obesity, it is necessary that caregivers recognize hunger and satiety cues. Evidence suggests that if parents are not able to recognize their infants' hunger and satiety cues, and over feeding occurs, the occurrence of RIWG is likely, and it is positively associated with obesity in

later childhood. This evidence demonstrates the importance for parents, regardless of feeding method, to use feeding practices that promote healthy feeding behaviors and weight gain during this critical developmental stage.

Early Childhood Feeding Practice Interventions

A majority of parental feeding practice interventions for early childhood found through the review of the literature were initiated during preschool ages. However, some interventions that were initiated in infancy were found and analyzed as well. Brotman et al. (2012) conducted a randomized control trial (RCT) in the United States to deliver a family intervention that was aimed at promoting effective parenting through the appropriate use of responsiveness and control, and handling child behavior. This study was originally designed to provide an intervention to a family that had children identified as high risk for behavior problems at the age of four; however, at the completion of the study, these children were observed at eight for BMI and were noted to have a significantly lower BMI compared to the control subjects despite no nutritional or dietary content being delivered within the intervention. This study demonstrates the importance of effective parenting alone in healthy child development and behaviors.

Spence, Campbell, Crawford, McNaughton, and Hesketh (2014) conducted a cluster-randomized controlled trial following the Melbourne Infant Feeding Activity and Nutrition Trial Program (INFANT) in an Australian population that sought to test if maternal feeding knowledge, maternal feeding practices, maternal self-efficacy, and maternal dietary intakes acted as mediators to the interventions' effect. The intervention started when the children were approximately four months old and was delivered quarterly over a 15-month period and included educational activities, peer discussions, a

DVD along with written materials that were designed to target nutrition, physical activity, and sedentary behavior with first-time parents. At the end of the intervention, mothers in the intervention group demonstrated a higher knowledge and lower use of foods being used as rewards, and it was found that the intervention had a direct effect on the quality of the child's diet.

Jansen et al. (2014) designed an intervention to evaluate and validate a questionnaire that had been previously utilized in the Australian and New Zealand NOURISH RCT, that sought to evaluate an early feeding intervention that had been designed to promote maternal feeding practices that would promote healthy child growth. There was found to be a lack of clarity and consistency among the previous questionnaires when used with parents of children under the age of three. One missing but valid piece of information when assessing feeding practices includes structured meal environments. The completion of the evaluation and validation of the questionnaire offered a more reliable and valid measure of parental feeding practices, specifically when looking at maternal responsiveness to the child's hunger and satiety signals and authoritative feeding practices, but it was noted that more population samples would be necessary for further validation beyond the defined population for the study.

Daniels et al. (2015) developed a large RCT intervention starting in infancy aimed at helping guide first-time mothers in an Australian population on "protective" complementary feeding practices with the goal of reducing childhood obesity. The intervention consisted of two modules, each consisting of six sessions. The first module began when the infants were between four and seven months of age, and the second module started between 13-16 months of age. The content was focused on healthy eating

patterns and growth rather than a focus on obesity prevention specifically. The goals of the intervention were to increase the following: exposure to healthy foods; responsive feeding that recognizes and responds appropriately to infant hunger and satiety cues; self-regulation of food intake; and positive parenting that is defined by Daniels et al. (2015) as "warmth, encouragement of autonomy, and self-efficacy" (p. e41). Mothers with the highest retention were those with a median age of 30.8, married or in a relationship, and held a university education. The intervention group used more responsive feeding than the control group which received the standard of care, and who were shown to use inappropriate food responses in their children 1.2 to 1.8 times more often than the intervention group. Ultimately, the children in the intervention group had BMI's between 6% and 17% lower than the children in the control group.

Machuca et al. (2016) conducted a non-randomized observational comparison group design study that incorporated a Well Baby Group (WBG) intervention that was compared to the standard one-on-one traditional care that parents receive during the first 18 months of their child's life in the primary care setting. Participants were enrolled from a New York City clinic in the WBG by the time the infant was two months old. The WBG incorporated a curriculum that focused on healthy nutrition and responsive parenting. It was shown that 90% of the of the intervention group children were less likely to be overweight, while none of the intervention group children were obese at two years of age. In comparison, 6.4% of children receiving traditional care in the control group were found to be obese (Machuca et al., 2016). This was shown to be a cost-effective way to explore further to help reduce the rates of overweight and obesity, and a

positive aspect of conducting WBGs was found that these group settings were not subjected to the time constraints that tradition care struggles with (Machuca et al., 2016).

Helle et al. (2017) conducted a RCT evaluating the effect of an eHealth intervention with a goal to increase knowledge about infant nutrition and help parents develop protective feeding behaviors. This intervention is ongoing and is being conducted with Norwegian parents with children between six and 12 months of age who will be followed until the children are possibly 24 and 48 months old, making the final results currently pending. It was noted that several parents reported concerns with feeling insecure about their skills in parental feeding practices to help foster their child's development and expressed a desire for more information on this topic. It was further noted with the development of this intervention that there are barriers that have been found that prevent the development of healthy eating habits in children, primarily noted to the use of parental feeding practices that prevent the child from using their hunger and satiety signals to initiate and end a feeding. This potentially overrides the child's ability to self-regulate energy or food intake that has been found to develop during infancy (Helle et al., 2017).

Through this review it was determined that most of the interventions were conducted in countries outside of the United States, with the exceptions being Machuca et al. (2016) and Brotman et al (2012), demonstrating a further need for more intervention studies that help parents to develop responsive feeding practices within the United States are necessary.

Responsive Feeding Guidelines

The feeding guidelines for infants and young toddlers, a responsive parenting approach developed by the Robert Wood Johnson Foundation (2017), are intended for primary caregivers of infants and toddlers. For the purpose of this project, the guidelines that apply to responsive feeding of infants from birth through six months of age will be presented, followed by an appraisal of the guidelines using the AGREE II instrument (2009). The implementation bundle of guidelines selected for this project to improve responsive feeding practices utilized by parents of infants are summarized in Table 1.

Table 1.

Summary of Responsive Parenting/Feeding Guidelines for Caregiver: How to Feed in the First 6 Months

Responsive Feeding	**Implementation Bundle of Guidelines**
Hunger and Satiety Cues	1. Responsive feeding involves recognizing and understanding your baby's hunger and satiety cues and associated behaviors and responding accordingly through a warm and nurturing relationship. 2. Babies are born with a natural ability that helps control their appetite. It's important for you to learn how to interpret and respond accordingly to your baby's hunger and fullness signals. Being able to do that takes some learning.

	3. Misinterpreting your baby's hunger and fullness signs can reduce your baby's ability to self-control her/his appetite and lead to overeating as she/he grows up. 4. Help your baby learn to eat only in response to hunger and stop when full, so that she/he doesn't learn to eat for reasons other than hunger. 5. Crying by itself cannot be interpreted as a sign of hunger. Additional cues that may indicate that your baby is hungry at this age are: bringing hands to mouth, rooting reflex (ability that babies are born with to help with breastfeeding; it involves turning their heads toward anything that strokes their cheek or mouth), sucking noises, fast breathing, clenching fingers, flexing arms and legs. 6. Although many parents interpret crying as a sign that the baby is hungry, it is important to remember that babies cry for many reasons—they may be wet, uncomfortable, or tired. 7. When your baby cries, before offering food, try to soothe to calm her/him down and first check for things that are making your baby uncomfortable. Doing this may

	help you avoid overfeeding your baby or setting up the expectation that crying will always lead to feeding. 8. Your baby will let you know when she/he is full and no longer wants to eat. For example, at this age she/he may push you away, stop sucking, extend or relax her/his arms, legs, and fingers, or simply fall asleep. 9. Babies have tiny stomachs, so they need to feed often throughout the day.
Soothing Techniques to Calm a Baby	1. Use soothing techniques to calm a crying baby, such as rocking, swinging, swaddling, repeating a word, shushing, or changing her/his environment. 2. Some, but not all, babies may need a pacifier to calm down. 3. If your baby was recently fed and is crying or fussy make sure to check for things that are making her/him uncomfortable, such as a wet diaper, and try to calm her/him down using soothing techniques.
Temperament	1. Knowing your baby's temperament and causes of fussiness can help you to interpret the soothing and feeding needs she/he is communicating, and help your baby develop and grow well.

	2. Your baby's fussiness is not always related to hunger. For example, it may be related to being wet, too warm or cold, tired, overstimulated, teething, or being ill. 3. Some babies have a fussier personality or temperament than others or experience times that they are more fussy than usual. Fussiness could be interpreted as a baby being hungry when it's not and could lead to overfeeding.
Pressure to Finish Feeding	1. Don't force your baby to finish the bottle or continue eating from your breast, since this will interfere with the baby's natural ability for appetite control down the road. Remember that your baby knows when to stop feeding.
Feeding Environment	1. Feed your baby in a pleasant environment where you can interact warmly with your baby. 2. Do not pressure your baby to finish the bottle or food on the plate. 3. Do not give a bottle or food to your baby as a reward for behaving the way you want. Only offer food in response to your baby's hunger signals. 4. Do not feed your baby in front of the TV. Meals should be a bonding and social occasion where both parent and

	baby benefit from the nurturing interactions that occur during a feed. 5. Remember to interact warmly and to be responsive to your child's behaviors while feeding. 6. Avoid distractions while feeding your baby, including using your smartphone. Your baby requires your full attention and interaction while eating

Table 1. Reproduced from Robert Wood Johnson Foundation, February 2017, p. 41-42.

Appraisal of Feeding Guidelines. The guidelines were critically appraised to assess their quality using the six domains of the AGREE II instrument (2009). According to the AGREE instrument, the guidelines: clearly and explicitly stated the overall objectives; provided a detailed description of what health questions the guidelines are set to answer, and clearly described the population of caregivers for infants and toddlers under 24 months of age; and were developed by a comprehensive 14-member group of professionals serving as an expert panel, including professionals of epidemiology and public health, registered dieticians, professors of pediatrics, food and nutrition, research and public policy, behavioral sciences, department of surgery and pediatrics, and obstetrics and gynecology.

While an extensive review of the literature was conducted to develop the guidelines (Robert Wood Johnson Foundation, 2017), it was not specified how the search was conducted, making replication of the search difficult, and there was not identified inclusion or exclusion criteria described. The strength and limitations of the evidence are

clearly described. An explicitly stated five-step process was described in the development of the guidelines. A procedure for updating the guidelines was discussed, describing that these guidelines were developed because there was a lack of any dietary guidelines for this age group, and further updates will be addressed in 2020 by the Dietary Guidelines for Americans (DGA) committee.

The feeding guidelines are specific in what they recommend, and other options besides responsive feeding are discussed to prevent childhood obesity, including sleep hygiene, physical activity, and use of electronics. Key recommendations are presented in easy-to-identify tables. Potential barriers and facilitators are identified under implementation considerations of these guidelines, including environmental influences; economic and social determinants of health; early care and education programs; food and nutrition assistance programs; and the marketing of foods, beverages, and infant formulas to young children and their caregivers. While there was no explicit discussion of resource implications, these guidelines direct how parents and caregivers should respond to and feed their children; therefore, it would be reasonable to not anticipate many resource implications in applying these recommendations.

Monitoring and auditing criteria were identified as monitoring weight-to-length ratios to assess infant and toddler growth until BMI percentiles are utilized after two years of age. There were no funding bodies identified that may have influenced the content of the guidelines, and no competing interests were identified with the development of the guidelines. The total scoring of the six domains are presented in Table 2.

Table 2.

Scaled Domain Scores

Domain	Score
Domain 1: Scope and Purpose	94%
Domain 2: Stakeholder Involvement	94%
Domain 3: Rigour of Development	90%
Domain 4: Clarity of Presentation	89%
Domain 5: Applicability	83%
Domain 6: Editorial Independence	92%

According to the critical appraisal completed using the AGREE II instrument (2009), the quality of the feeding guidelines developed by the Robert Wood Johnson Foundation (2017) to promote responsive feeding practices in infants and toddlers can be determined to be high in quality and recommendable for use.

Summary

Parenting styles contribute to what feeding practices a caregiver utilizes. As RIWG is strongly associated with later childhood obesity, the feeding practices that a parent or caregiver uses are a modifiable risk factor and are further shown to influence a child's weight and overall health by promoting eating behaviors that can prevent obesity. While the number of interventions during infancy are limited on improving feeding practices, they have nonetheless been shown to be effective in improving healthy feeding practices and reducing BMI percentiles in children years after the interventions are implemented.

Parents and caregivers begin to utilize feeding practices at a child's birth. It is necessary that healthcare providers are promoting and educating parents on feeding

practices that will not only help to prevent obesity in childhood but help to improve the overall health and quality of the child's life. Chapter three will further focus on the methodology through describing the project design, including the target population, instruments used, and procedures of the project.

Chapter III

Methods

This chapter focuses on the methodology of a quality improvement project aimed to improve parental use of responsive feeding practices during the neonatal period and into early infancy following a pre/post-survey design. A description of the target population will be provided, including the process of recruiting and selecting participants within the study, and all the instruments used, the procedures followed, result analysis, and the evaluation of the project will also be discussed

Project Design

An educational offering was arranged and held with all the project participating pediatric and family practice healthcare providers and staff of a federally funded community health clinic in the Midwest on August 20, 2019. The educational offering included information on responsive feeding practices and their significance to the neonatal population, current feeding guidelines for infants, and the methodology that was followed for data collection. A teaching tool that emphasizes responsive parenting practices during feeding, as supported by current feeding guidelines, was presented to organizational healthcare providers to promote increased education among parents/caregivers of newborns. Directly following the educational offering, all the

providers and nursing staff were surveyed to obtain demographic information and to evaluate their current use of responsive feeding education and to evaluate their satisfaction with the education offering.

The second phase of the project began on August 21, 2019, at the participating community health clinic and followed a quasi-experimental design. Quasi-experimental studies, while not true experimental research, manipulate an independent variable before the dependent variable is measured and participant participation is not selected randomly (Price, Jhangiani, & Chiang, 2015). In this project feeding education was the independent variable and the dependent variables were parental feeding style beliefs and behaviors and infant growth. Participants were not randomly selected, but all parents/caregivers of newborns presenting to the health clinic for their initial newborn primary care appointment were sought out for participation. The projects' design included a pre/post-survey that allowed for quantitative data collection used for statistical analysis. The pre-survey portion was administered to parents/caregivers before the teaching tool was provided by the health clinic nursing staff at the initial newborn visit with the healthcare provider. Birth weight and current newborn weight were obtained at the initial visit. For the final part of the project, parents/caregivers were asked to complete a post-survey on responsive feeding practices utilized at the infant's two month well child check, and the participating clinic staff collected the infant's weight and length.

Target Population

The target population for this research project included primary healthcare providers and nursing staff of newborns and infants and, parents/caregivers of healthy, term newborns receiving primary care services at the participating community health

clinic in Southeast Kansas. All healthcare providers who provided direct care to newborns and infants were eligible for participation in the study. Eligible healthcare providers consisted of licensed doctors of medicine, doctors of osteopathy, nurse practitioners, and physician's assistants that provided primary care to newborns and infants. Any nursing staff that assisted in patient care of the identified patient population were also invited to participate. Any parent over the age of 18, presenting for their initial healthcare visit with a healthy, term newborn that met all eligibility criteria was invited to participate in the project and complete both the pre and post surveys on the use of responsive feeding practices.

Recruitment

The target population was recruited from the participating health clinic with a goal to recruit as many eligible participants as possible. A minimum goal of 30 participants was set to help produce generalizability in the project findings. All the providers that served pediatric patients were invited to participate by attending the educational offering and delivering responsive feeding education to parents at their initial newborn visit in the clinic. Parents/caregivers of newborns were recruited from the initial newborn visit and participants were identified by participating clinic nursing staff and primary care providers. All participating parents/caregivers were recruited according to the inclusion and exclusion criteria established for the project. Participation in the project was on a voluntary basis, and no compensation was provided to any participants.

Inclusion/Exclusion Criteria

Inclusion criteria for participation in this project consisted of all health care providers holding a valid license as a doctor of medicine, doctor of osteopathy, nurse practitioner, or physician's assistant, and offering the provision of primary care services to newborns and infants. All parents/caregivers of eligible newborns that presented to the community health clinic for an initial newborn visit were invited to complete the initial parent survey after informed consent (Appendix A) was obtained. Informed consent and the initial survey were collected by the health clinic nursing staff once completed by the parent/caregiver during rooming of the patient for the scheduled appointment with the healthcare provider. Eligibility was determined by the health clinic nursing staff based on the project's inclusion/exclusion criteria that were identified in the beginning portion of the initial survey. Parental participation in the educational intervention portion of the project included parents of healthy term newborns that were over 18 years of age and English speaking. First time parents and parents of multiple children were eligible for participation. Newborns that were presenting to their initial primary care appointment must have had an uncomplicated hospital stay after delivery for participation eligibility.

Exclusion criteria pertained to parents of any newborn that experienced any complication during the initial neonatal hospital stay after delivery. The exclusion criteria included any extended newborn hospital stay; or a hospital stay complicated by the need for administration of any intravenous (IV) infusions including antibiotics, IV fluids, or any procedure defined as invasive except for circumcision.

Protection of Human Subjects

Protection of human subjects was a priority of this study to ensure that all participants were in no way negatively affected or harmed. This research involved a two-part process including a quasi-experimental design and a descriptive design of the involved healthcare providers and nursing staff. After reviewing the conditions according to Pittsburg State University's process for review that involves human subjects, an exempt review was completed, and Institutional Review Board (IRB) approval was originally obtained on May 15, 2019.

The descriptive portion of the project involved only healthcare practitioners and pediatric and family practice nursing staff, all of whom were over the age of 18. This population did not involve any subjects who would be considered vulnerable. The surveys collected from the practitioners and nursing staff included credentials, years of practice, beliefs and use of responsive feeding education, and satisfaction with the intervention completed. No risk or harm was identified with survey participation. This section of the research design met criteria according to Pittsburg State University's protection of human subjects as eligible for exempt review by the IRB.

The quasi-experimental design portion of the project involved both the parent and their child for participation. The human subjects that received the intervention were parents over the age of 18 of healthy newborns. An informed consent document (Appendix A) was collected from the participating parent to inform them of the nature of and their participation in the project. The newborns, on the other hand, are considered a vulnerable population, and measurements of length-to-weight ratio were collected at birth, the initial newborn visit, and their two-month well child check. The intervention

and education that were given to parents/caregivers was based on current feeding guidelines, and a low risk of any harm was identified to the participating infants.

Participation in this section of the study was on a volunteer basis. Personal information of parental/guardian participation was obtained on the informed consent, which was witnessed by the participating health clinic nursing staff. Throughout the identified data collection timeframe, no personal health information was collected on any surveys aside from infant height and weight. Surveys administered to the parent collected identifying information of age, gender, race, and ethnicity. All data collected were kept confidential by the project-participating nursing staff until obtained by the primary investigator. Data were kept in a locked box until the completion of the study. Following the completion of the study and program, all collected surveys and questionnaires will be destroyed through a shredding process by the primary investigator.

Ethical Considerations

Ethical considerations must be well-thought-out for the protection of all human subjects involved. This project's focus was to educate parents of newborns on responsive feeding practices as supported by current feeding guidelines and was identified as having a low risk of harm. There was no deception involved in this project and no physical contact was made with vulnerable population participants that could cause physical distress.

Ethical concerns included accuracy of data collected from human subjects, and the maintenance of participant confidentiality. It was possible that participants falsely answered upon the survey of their views and feeding practices, resulting in incorrect data

representation of true parental practices. Parent and infant confidentiality were maintained by limiting personal identifying information. While the parental/caregiver name was obtained on the informed consent, personal identifying information on the survey was avoided to maintain confidentiality. Instead, a number was assigned to the participants that was used to mark the parent surveys and was also attached in an electronic note in the electronic medical record (EMR) to help alert healthcare providers and staff that the infant's parents/caregivers were participating in the project. All information was kept in a locked box with a combination only known to the clinic staff involved in project participation. A change champion, who is a registered nurse (RN) among the clinic nursing staff, was selected to oversee maintenance of the locked box to complete the data collection process in the absence of the primary investigator, and to minimize clinic employee access to participant data.

Instruments

The surveys used to collect data on parental feeding beliefs and behaviors were adapted from Thompson et al. (2009), Infant Feeding Styles Questionnaire (IFSQ), a validated self-reported instrument with the permission of the primary author (A. Thompson, personal communication, November 30, 2018). Savage et al. (2018) used IFSQ in a responsive parenting intervention to better understand infant feeding practices, and while the survey had been previously validated for prior research; for this research study, only questions pertaining to infants were pulled from the survey to better fit the target population. The adapted version of IFSQ was further validated by a review of the project committee members.

This project utilized an initial survey (Appendix B) which was given as a pen and paper survey to be completed by the parent at the newborn's first initial appointment, and a post survey (Appendix C) to be completed at the two-month well child appointment. The survey included 36 questions to help measure the parents' feeding beliefs and what behaviors parents elicited during feedings before and after the educational intervention. The survey utilized some demographic data of the parents as well as the feeding method used. A 5-point Likert scale was used for measurement with a rating of one through five, with a one indicating "Strongly disagree" and five as "Strongly agree" when assessing beliefs. The 5-point Likert scale used to measure feeding practices measures one as "Never," two as "Rarely," three as "Half of the time," four as "Most of the time," and five as "Always." The survey also collected parental data regarding whether the participants were first-time parents or a parent of more than one child. Feeding practices were assessed in the following styles: Laissez-Faire, pressuring/controlling, restrictive/controlling, indulgent, and responsive. The project surveys were validated as effective instruments to collect data on parental feeding beliefs and parental feeding practices in newborns and infants.

A separate survey (Appendix D) was given at the end of the community clinic staff educational offering held on August 20, 2019. The survey collected data on staff and providers and included questions about credentials, education, and years of practice, how often responsive feeding education was provided to parents of newborns prior to the educational intervention, how important they believed responsive feeding education was, if they believed the educational offering increased their knowledge, and if they were satisfied with the educational offering.

Another survey (Appendix E) administered during the last month of data collection was made available from January 6, 2020 through January 20, 2020 to the clinic healthcare providers and staff that participated in the project. On questions one through three, a Likert scale was used to measure how often responsive feeding education is provided to parents of newborns since the use of the educational intervention, how satisfied the providers and staff were with educational brochure that was developed and utilized during the project, and how likely it is that the provider and staff will continue to incorporate the intervention into routine practice. Open ended questions were used on questions four and five to evaluate what additional information providers and staff would like to have seen provided in the intervention, and what did they like best about the intervention. Questions one and three were scored on a Likert-type scale from zero percent of the time to 100 percent of the time that increased by 25 percent increments. The Likert scale for provider satisfaction on question two is scored with one as "Highly Dissatisfied," two as "Somewhat Dissatisfied," three as "Neutral," four as "Somewhat Satisfied," and five as "Highly Satisfied."

Procedure

IRB Approval. IRB approval was obtained prior to beginning the project's data collection phase. First approval was sought from Pittsburg State University Irene Ransom Bradley School of Nursing. After obtaining approval from the School of Nursing, an application to apply for an exempt review was completed and submitted as outlined by the guidelines for the process of research involving human subjects to the Pittsburg State University IRB for review to determine eligibility. IRB approval was obtained on May 15, 2019, which allowed data collection to begin June 1, 2019. However, due to delays

and not being able to schedule the provider educational offering until August 20, 2019, an amendment for IRB approval was obtained via email to shorten data collection from administering the post parental survey at the child's four month follow up to a two month follow up (B. Peery, personal communication, July 9, 2019).

Statement of Mutual Agreement with Cooperating Agency. Approval was obtained from the participating health clinic for study participation by the health clinic's medical director, and Director of Development (D. McNay, personal communication, November 5, 2018). A health clinic pediatric physician was appointed as the project's point of contact for the health clinic involvement during the implementation process of the intervention and the project's data collection phase. Original planning was to hold an educational offering for health clinic staff in June, but due to communication delays between the cooperating agency and limited availability of appointment times that all necessary participating clinic providers and staff were available to attend, the final educational offering was moved to August 20, 2019.

Timeline of Project Phases. Data collection started on August 21, 2019 and continued until November 21, 2019 for the newborn's initial primary care visit. No initial newborns were eligible for participation after November 21, 2019. Post surveys were continued until all available data was collected. Participant data collection was concluded at the infant's two month follow up with all participant data collection completed by January 15, 2020. The final scholarly project will be completed by April of 2020.

Resources Needed. Personnel resources required for this study included the project committee, the participating pediatric and family practice primary care providers, and the health clinic support staff. A project team that supported administering the

surveys, both the initial and two-month follow up, along with providing the educational brochure to parents during the initial newborn visit was vital for successful project implementation. Technological resources needed included Microsoft Word for brochure development and PowerPoint for presentation of material at the healthcare provider in-service educational offering. Fiscal resources needed included funds for the printing of brochures to be given to parents at the initial newborn visit as well as the surveys, which were covered by the DNP project student.

Identification of Eligible Subjects/Organization. Eligible providers were identified through the participating organization in this project, which employs multiple pediatric and family practice primary care providers. An in-service educational offering was conducted to provide education on responsive feeding practices and to present the project's methodology of data collection to clinic providers and participating clinic nursing staff. Parents who were eligible for the study were identified by participating healthcare providers and nursing staff through reviewing scheduled patients and identifying any initial newborn appointments daily. The parents were approached by the nursing staff after the patient was roomed, and informed consent was obtained prior to survey administration. Parents had to elect to participate at the initial newborn visit to be included in the study. Entry into the study during later healthcare visits was not allowed for participation.

Description of Study

This project first sought to gain the support of pediatric and family practice primary provider's and nursing staff that provided services to newborns and infants. The goal of healthcare provider support was accomplished by holding an educational offering

where a PowerPoint presentation (Appendix F) over the evidence of responsive feeding practices and current responsive feeding guidelines were presented. The original arrangements made with the health clinic was estimated for approximately 20 healthcare providers to attend the offering. There were three family practice providers and two medical assistants that were absent from the educational offering due to being behind in clinical responsibilities that they were not able to leave at the time of the scheduled offering. In addition, the educational brochure (Appendix G) developed by the primary investigator was used to educate parents involved in the study and was also reviewed during the educational offering. Any provider concerns and questions were addressed through the in-service meeting.

Participants for the project were recruited from parents of newborns that met the study inclusion/exclusion criteria and were attending their first primary care visit for their newborn since hospital discharge. Prior to meeting with the healthcare provider, parents completed the initial survey to assess demographic information and current feeding beliefs and practices. Inclusion/exclusion criteria was assessed by nursing staff prior to initiation of the initial survey. Eligible participants were assigned a participation number with the first participant starting at "1." This number was placed on the surveys and placed in the newborn's electronic medical record (EMR). The educational brochure was then given and reviewed with the newborn's caregiver after the initial survey was completed by the nursing staff prior to the patient being seen by the healthcare provider. The educational brochure was kept by newborn's caregiver for referral at home. At the infant's two-month well-child check, the post-survey was provided to infant caregivers during the rooming process of the appointment by the nursing staff. During the last

month of data collection, from January 6, 2020 through January 20, 2020, a descriptive survey regarding the healthcare provider's satisfaction of the responsive feeding intervention was administered and collected.

Data Collection

The surveys were administered and collected by the participating facility nursing staff during patient rooming. Collected data was stored in a folder that was identified by the study participants' assigned numbers. All folders were kept in a confidential area inside a combination locked box. The locked box had all pertinent contact information for the primary investigator, including personal cell phone number and email. Only clinic staff participating in the project had access to the combination, and all data was collected by the primary investigator at the conclusion of data collection.

Outcome Data. Outcome data collected and evaluated was based on the following project research questions:

1. Did an educational offering to healthcare providers on responsive feeding practices increase their understanding of the importance of the use of responsive feeding practices in newborns and infants?
2. Did healthcare providers believe more parental education was needed on responsive feeding practices?
3. How frequently did providers educate parents on responsive feeding practices prior to an educational intervention?
4. How important did providers feel responsive feeding practices were to their healthcare practice?

5. How frequently did providers educate parents on responsive feeding practices after an educational intervention?
6. How likely were providers to continue incorporating responsive feeding education into their routine practice to parents of newborns after the project's intervention?
7. How satisfied were providers with responsive feeding education brochures given to parents?
8. What were the demographic characteristics of parents using the community health clinic for healthcare of their newborn?
9. Did educating parents/caregivers about responsive feeding practices change their feeding style beliefs and behaviors?
10. Did increased education of responsive feeding practices correlate to normal infant growth trajectories?

Treatment of Data/Outcomes/Evaluation Plan

Evaluation Measures Linked to Objectives. The outcome measures relate back to the objectives in the logic model in Chapter 1, Figure 3. This study measured healthcare practitioners' current beliefs and attitudes regarding responsive feeding practices and education to parents on responsive feeding in newborns. The second part of the study sought to increase education to parents of newborns on responsive feeding practices and measure parental beliefs and behaviors of responsive feeding practices prior to and two months after the intervention was initiated. The outcomes measured also include the effectiveness of an educational intervention initiated in early life and infant growth trajectories from birth until two months of age.

Instruments Linked to Measures and Objectives. A survey was given to health care providers and another survey adapted from the IFSQ was used as the instruments of measurement for parents of newborns to gather quantitative data linked to the project's objectives. The healthcare provider survey obtained how often responsive feeding education is provided to parents/caregivers of newborns since the use of the educational intervention, how satisfied the providers and staff were with the educational brochure that was developed and utilized for the project, how likely the provider and staff will continue to use the intervention in routine practice, what additional information providers and staff would like to have seen provided in the intervention, and what did the providers and staff like best about the intervention. A positive outcome for the provider measures would include a belief that responsive feeding education is important for providers to discuss with parents of newborns and a high level of satisfaction with the educational intervention with an intent to continue to educate parents and caregivers on responsive feeding in newborns and infants. The continuation of healthcare providers educating about responsive feeding practices to parents of newborns beyond the completion of this study would also represent a positive outcome but would not be measurable related to the scope and timeframe of this project.

The parental survey that is scored based on a 5-point Likert scale includes questions about parental beliefs on feeding practices and what specific feeding practices the parents participated in within the first few weeks after birth prior to receiving education on responsive feeding, and then the same questions are repeated again at the infant's two-month well child visit. Feeding practices will be assessed in the following styles: Laissez-Faire, pressuring/controlling, restrictive/controlling, indulgent, and

responsive. A positive outcome for these measures would be a higher degree of the use in responsive feeding practices used at the two-month well-child visit compared to the other feeding practices parents may have used prior to the intervention at the initial newborn visit. Infant weight for recumbent length will be another measure linked to the education instruments used, and a patient with a positive outcome will follow a healthy growth trajectory as defined by the WHO Child Growth Standards (CDC, 2010).

Methods of Analysis

Data were analyzed using SPSS Statistics for descriptive statistical analysis. The pre-surveys and post-surveys were compared through statistical analysis using paired t-tests for measurement to determine if an increased use of responsive feeding practices was utilized among parental study participants. For statistical significance to be accepted, the probability level was set at $p < 0.05$. Data was presented as percentages and frequencies to determine if the intervention improved parental use of responsive feeding practices and to determine the frequency of the healthcare practitioner's intention to continue to increase responsive feeding education after the completion of the intervention. An analysis was performed on infant weights to present the range of weight gain in infants whose parents practiced responsive feeding compared to the range of weight gain in infants whose parents did not practice responsive feeding as often.

Plan for Sustainability

For project sustainability, identification of all key stakeholders is essential and to determine each stakeholder's investment in the issue, influence, position, and the impact

of the plan on the stakeholders. Other important identifiers to consider in sustainability include any resources used including time or financial resources.

Sustainability of this project will require that all key stakeholders within the participating community health clinic will be supportive in promoting the project's objectives. The stakeholders with the highest influence to impede the continued implementation of the project objectives will include the participating clinic's medical director and all participating healthcare practitioners. Negative attitudes and beliefs about the implemented practice change in addition to the increased time of conducting the education during already full agendas of newborn education at the initial newborn visit may also pose as a barrier to the full adoption of the practice change in the future. If the intervention is shown to help improve responsive feeding practices and promote the development of healthy eating behaviors and infant weight gain, other community stakeholders may be more motivated to apply increased education of responsive feeding practices to other local community health practices. These other practices may include the local health department and any local labor and delivery units that provide neonatal care. Costs of the brochures are the only physical resource that will be necessary to provide education, and grants may be sought out to help fund the materials and other local community health initiatives that may help to promote the development of healthier eating behaviors in early life.

If practice changes are successfully implemented, healthcare professionals will be better positioned to target obesity risks and educate parents and families on healthy eating behaviors that elicit better health outcomes. A full stakeholder analysis, a more in-depth assessment of the environmental and organizational readiness, and an in-depth review of

the barriers and facilitators may be necessary for long-term sustainability but is beyond the scope of this project.

Chapter IV

Evaluation of Results

Restatement of Purpose

This project was designed to increase provider understanding of the importance of responsive feeding practices being initiated during the neonatal period, and to help providers increase education of responsive feeding practices to parents of newborns. The first set of data was collected to determine provider beliefs and their current parental education on responsive feeding practices to parents during the neonatal period prior to an educational offering. An educational offering was held, and participating health care providers of newborns and infants were informed on current infant feeding guidelines and given a teaching tool to administer to parents. After the educational offering, providers began offering parents of newborns an educational handout on responsive feeding at the first newborn office visit after birth. At the beginning of the visit parents were asked to complete a pre-survey. A follow up survey was administered at the infant's two month well child visit. The last set of data collected was at the end of parental data collection to determine provider's satisfaction with the teaching tool and their intent to continue to incorporate responsive feeding education to parents of newborns at the conclusion of the project.

Data collected were analyzed using SPSS v. 24. Descriptive statistics were used to describe both healthcare providers and parental participants. *Paired t-tests* were used to determine whether there was any statistical significance in the difference between pre and post parental feeding style beliefs and behaviors. *Pearson's r* correlation was used to determine if any correlation was found between parental feeding styles and infant weight gain.

Description of Population

Healthcare Providers. Twelve providers attended the educational offering (Figure 4). Twenty-five percent of them were physicians (n = 3) that held a Doctor of Medicine degree. Sixteen percent (n = 2) of the participants were attending physicians and were board certified through the American Academy of Pediatrics. Thirty-three percent (n = 4) were nurse practitioners who all held degrees of Master of Science in Nursing. Eight percent (n = 1) were a physician's assistant who held a master's degree. Sixteen percent (n = 2) were registered nurses who held a Bachelor of Science degree, and sixteen percent (n = 2) were medical school students. There were three family practice providers who were unable to attend the educational offering. The educational offering participants had varying degrees of experience (Figure 5). Fifty-three percent of participants (n = 7) had zero to five years of experience in practice. Seven percent (n = 1) had five to ten years of experience in practice. Twenty three percent (n=3) had ten to fifteen years of experience in practice, and seven percent (n = 1) had over fifteen years of experience in practice.

Figure 3.

Healthcare Providers Present at Educational Offering

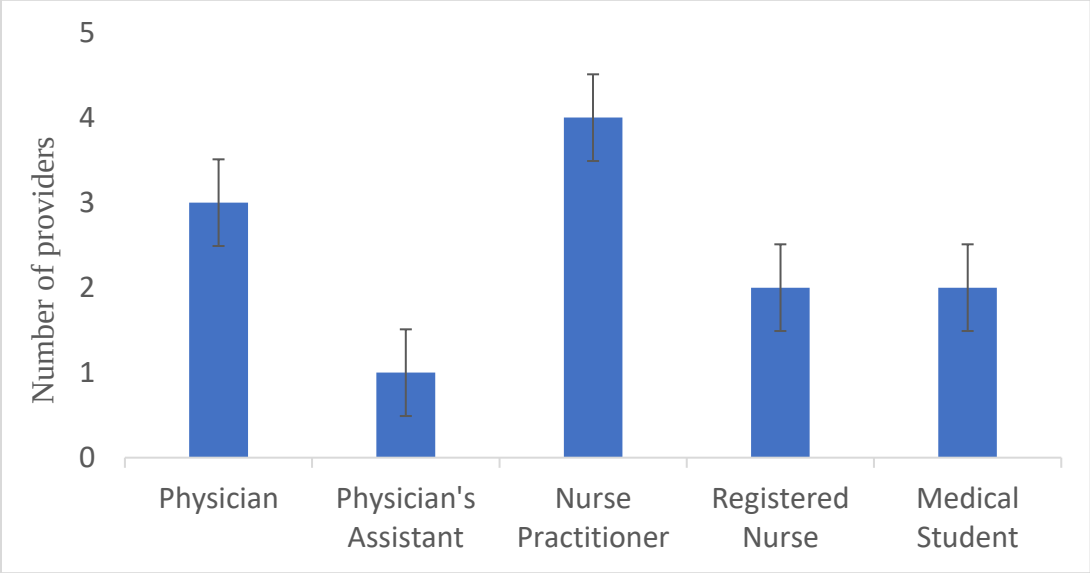
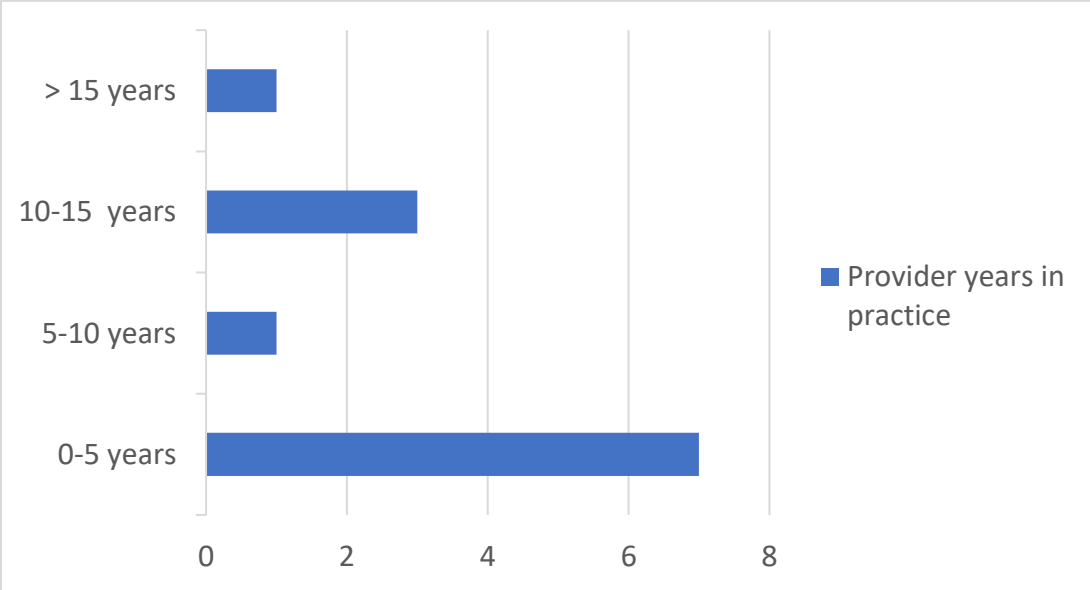


Figure 4.

Provider Years in Practice



Parental Participants. Twenty-one parents participated in the project. Parental ages ranged between 18-35, with most ranging between 18-26 (Table 3). Eighty-six percent of participants were female (*n*=18), fourteen percent were male (*n* = 3). Thirty-eight percent of newborns (*n* = 8) were a parent's first-born child (Figure 6). Eighty five percent of parents (*n* = 18) where white while 14% (*n* = 3) were of Hispanic/Latino ethnicity. Sixty-six percent of parents (*n* = 14) had previously received education on feeding their newborn, while 33% (*n* = 7) had not received any education. All newborns (*n* = 21) were term, 9% (*n* = 2) had an extended hospital stay, and none of the newborns required any IV administration of medications or had any invasive procedures following birth. Feeding method at the initial newborn visit showed 47% (*n* = 10) were breastfed, 33% (*n* = 7) were bottle fed, and 19% (*n* = 4) were both breast and bottle fed.

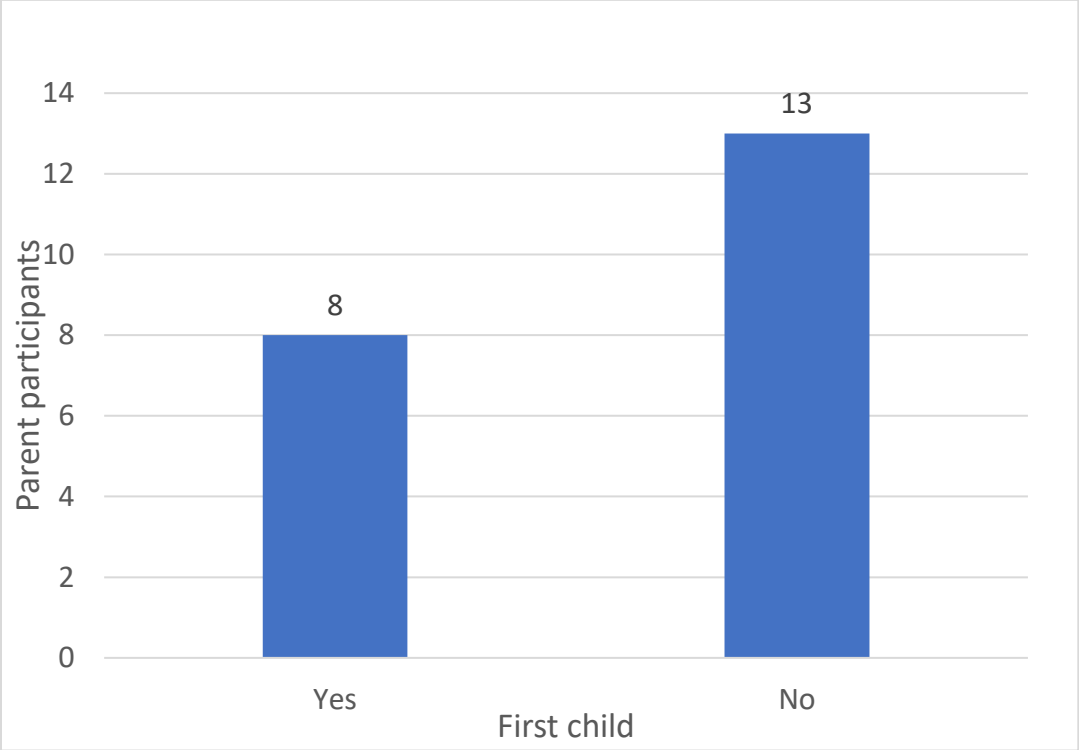
Table 3.

Parental Participants' Age

Age	Frequency	Percent
18	1	4.8
20	1	4.8
21	2	9.5
22	2	9.5
23	4	19.0
25	1	4.8
26	3	14.3
27	1	4.8
28	1	4.8
29	1	4.8
32	2	9.5
35	2	9.5
Total	21	100.0

Figure 5.

First Time Parents



Analysis of Project Questions

1. *Did an educational offering to healthcare providers on responsive feeding practices increase their understanding of the importance of the use of responsive feeding practices in newborns and infants?*

Out of the 12 providers that attended the educational offering, most agreed with the belief that their understanding on responsive feeding practices increased as a result of the offering. Providers rated if there was an increase in their understanding on the importance of responsive feeding in infants and its role in the prevention in childhood obesity on a five-point Likert scale ranging from 1 (disagree) to 5 (agree). The minimum score

reported was 3 and the maximum score of being in agreeance was 5. A mean score of 4.5 with a standard deviation of 0.674 was found for the group (n = 12).

2. *Did healthcare providers believe more parental education was needed on responsive feeding practices?*

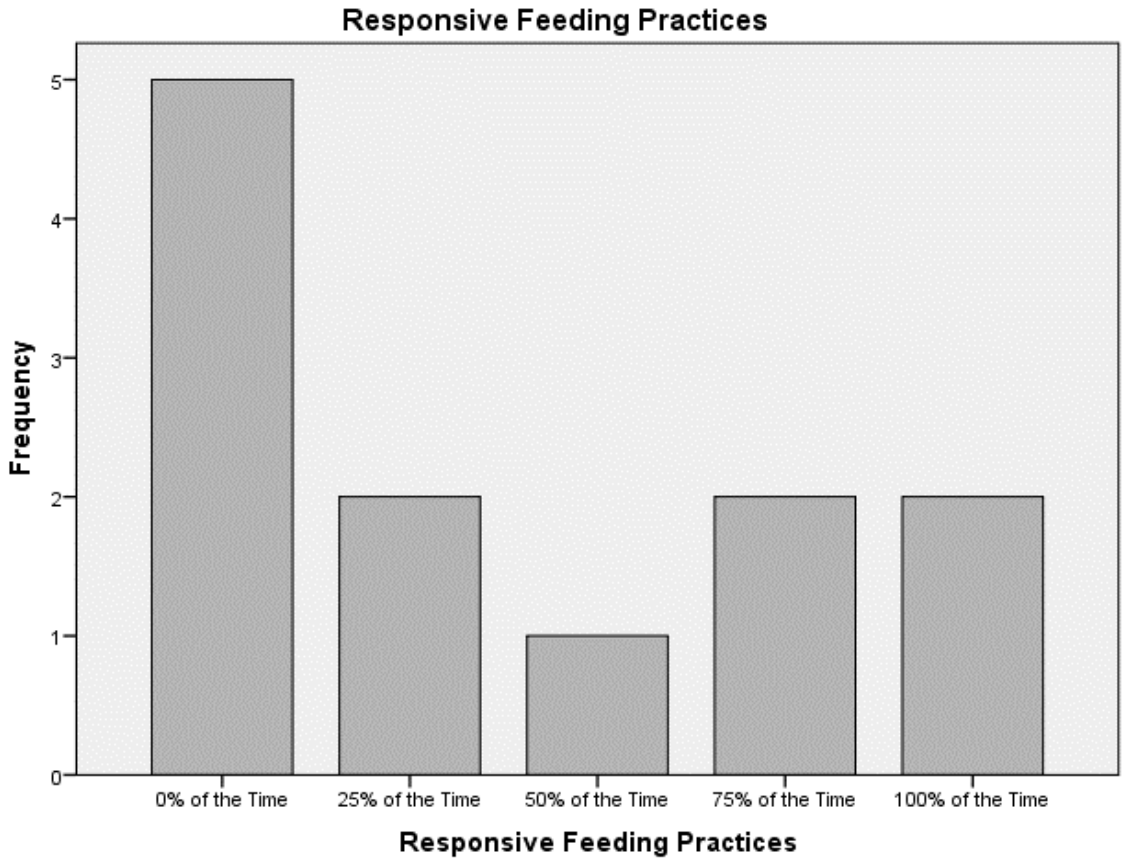
Most providers (n = 11) agreed that more parental education is needed about responsive feeding practices, while one participant chose not to answer this question. Providers rated their belief that more parental education was needed on responsive feeding practices on a five-point Likert scale ranging from 1 (not important) to 5 (highly important). The minimum score reported on this question was three and the maximum score reported was five. A mean score of 4.27 with a standard deviation of 0.647 was found for the participants (n = 11).

3. *How frequently did providers educate parents on responsive feeding practices prior to an educational intervention?*

Data collected asked providers to assess how often they provided responsive feeding education to parents of newborns and infants prior to the educational offering (Figure 7). Providers rated their response on a five-point Likert scale ranged from 1 (0% of the time) to 5 (100% of the time) and each numerical value increased by 25% increments. The minimum score reported was one, while the maximum score was five. The mean score was 2.5 with a standard deviation of 1.624, representing that parents are being educated on responsive feeding 37.5% of the time on average.

Figure 6.

Provider Responsive Feeding Practices to Parents of Newborns and Infants Before an Educational Intervention



(n = 12)

4. *How important did providers feel responsive feeding practices were to their healthcare practice?*

After receiving an educational offering, healthcare providers were asked how important they believed responsive feeding practices were to their healthcare practice. A five-point Likert scale ranging from 1 (not important) to 5 (highly important). Most respondents (*n* = 11, 91.6%) answered the question. The mean was 3.91 with a standard

deviation of 0.701. None of the providers believed that the topic had no importance to their practice, while the central tendency indicates that many providers did not find it highly important.

Table 4.

Provider Educational Offering Survey

Educational Offering Descriptive Statistics						
	N	Range	Minimum	Maximum	Mean	Std. Deviation
Q3: Provider RF Education Use Prior to Intervention	12	4	1	5	2.50	1.624
Q4: Belief: RF Education Importance to Practice	11	2	3	5	3.91	.701
Q2: Belief: Need for More Parental Education	11	2	3	5	4.27	.647
Q1: Education Offering Increased Understanding of Importance	12	2	3	5	4.50	.674
Provider Offering Satisfaction	12	1	4	5	4.58	.515
Valid N	11					

5. *How frequently did providers educate parents on responsive feeding practices after an educational intervention?*

Data was collected from providers towards the conclusion of the parental data collection to understand how frequently providers intended to educate parents on responsive feeding practices after implementing the educational intervention. Six participants responded to the survey and rated their response on a five-point Likert scale ranging from 1 (0% of the time) to 5 (100% of the time) and each numerical value increased by 25% increments. The minimum score was a 2 with a maximum score of 5.

The mean was 4.0 with a standard deviation of 1.095 showing some variation in the answers (Table 5).

Table 5.

Provider Follow-up Survey

Provider Satisfaction Descriptive Statistics						
	N	Range	Minimum	Maximum	Mean	Std. Deviation
Q5: Intent to use after offering	6	3	2	5	4.00	1.095
Q7: Satisfied with Education Brochure	6	0	4	4	4.00	.000
Q6: Likely to continue to use education after intervention completed	6	4	1	5	3.50	1.378
Valid N	6					

6. *How likely were providers to continue incorporating responsive feeding education into their routine practice to parents of newborns after the project's intervention?*

To answer the question of how likely providers are to continue to incorporate responsive feeding education into their routine practice when caring for parents of newborns, participants rated their response on a five-point Likert scale ranged from 1 (0% of the time) to 5 (100% of the time) and each numerical value increased by 25% increments. To answer this project question, data were collected on the second provider survey given at the end of the intervention. Six participants responded to this question out of 12 pediatric and family practice providers. The minimum score was one and the maximum score was five, which was a range of four. The mean was 3.50 with a standard deviation of 1.378 (Table 5). This indicates that providers have less intention to

incorporate responsive feeding education into practice once the educational intervention has concluded.

7. *How satisfied were providers with responsive feeding education brochures given to parents?*

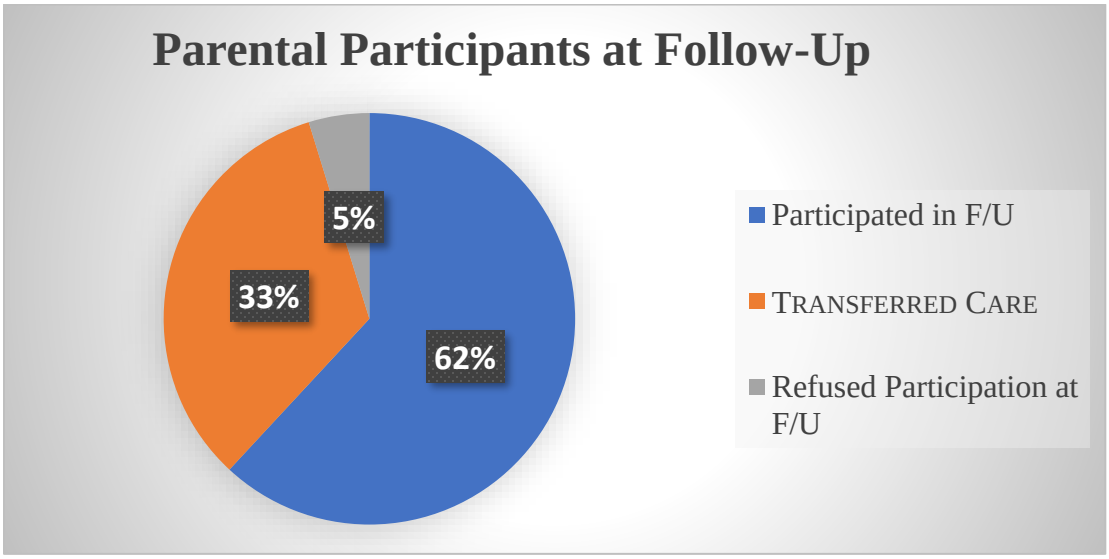
Data were collected on the second provider survey that was given at the end of the educational intervention to understand providers' satisfaction level with the educational brochure that was administered to parents of newborns to help provide responsive feeding education (See Appendix G). A five-point Likert scale ranging from 1 (highly dissatisfied) to 5 (highly satisfied). All responding participants (n = 6, 100%) were satisfied with the brochure with a mean score of 4 and a standard deviation of 0.000 (Table 5).

8. *Did educating parents/caregivers about responsive feeding practices change their feeding style beliefs and behaviors?*

There were 21 initial parental respondents at the initial newborn visit. Parental participants had a 61.9% (n = 13) response rate obtained at the two-month follow up. Of the original seven participants who did not participate in the follow up data collections, 85% (n = 6) had transferred care and 17% (n = 1) chose not to complete due to time constraints and the need to care for their infant (Figure 8). One eligible parent did not participate for unknown reasons. It is not known whether the lack of participation was due to their choice or healthcare team not administering the survey.

Figure 7.

Parental Participants at 2-Month Follow-up



(*n* =13)

Data was collected to compare feeding style beliefs and behaviors before an educational intervention at the initial newborn visit and then again at the two-month well child appointment. Pre and post parental surveys included 30 items on each survey. The first twelve items were the parent's current beliefs that respondents rated on a five-point Likert scale ranging from one (strongly disagree) to five (strongly agree). The second set of 18 items were parental current feeding behaviors rated on a five-point Likert scale ranging from one (never) to five (always). Descriptive statistics showed slight changes in each mean score as presented in Table 6.

Table 6.

Pre/Post Parental Surveys

Belief/Behavior	Pre-Range (n=21)	Post Range (n=13)	Pre-Mean	Post Mean	Pre-Std. Deviation	Post Std. Deviation

Belief 1: When my infant cries it usually means he or she needs to be fed.	3-5	2-5	4.29	4.15	.845	.987
Belief 2: An infant less than 6 months old needs more than formula or breastmilk to be full.	1-5	1-3	1.38	1.31	1.071	.630
Belief 3: I think it is okay to prop an infant's bottle.	1-3	1-3	1.24	1.38	.625	.768
Belief 4: Putting cereal in the bottle is good because it helps an infant feel full.	1-3	1-3	1.48	1.54	.873	.877
Belief 5: The best way to make an infant stop crying is to feed him or her.	1-5	1-5	3.0	2.77	1.304	1.235
Belief 6: It's important for the parent to decide how much an infant should eat.	1-5	1-5	2.14	2.08	1.352	1.320
Belief 7: It's important that an infant finish all of the milk in his or her bottle.	1-4	1-4	1.86	1.92	.964	1.188
Belief 8: An infant less than 6 months needs more than formula or breastmilk to sleep through the night.	1-3	1-4	1.24	1.23	.539	.832
Belief 9: Cereal in the bottle will help an infant sleep through the night.	1-3	1-5	1.38	3.08	.669	1.706
Belief 10: An infant should never eat fast food.	1-5	1-4	4.24	2.62	1.609	1.325
Belief 11: It's important that an infant be the one to set his or her own feeding schedule.	1-5	1-5	3.81	3.23	1.123	1.589
Belief 12: It's important for an infant to eat at the same times every day.	1-5	1-4	2.52	2.46	1.250	1.266
Behavior 1: I let my child decide how much to eat.	1-5	1-5	4.38	4.15	1.024	1.214
Behavior 2: When my child has/had a bottle, I prop/propped it up.	1-2	1-2	1.10	1.15	.301	.376
Behavior 3: There is a TV on while my child is eating.	1-5	1-4	2.33	2.08	1.390	1.382
Behavior 4: I keep track of how much my child eats.	1-5	2-5	4.0	4.28	1.225	.961
Behavior 5: I give/gave my child cereal in the bottle.	1	1	1.00	1.00	.000	.000
Behavior 6: I carefully control how much my child eats.	1-5	1-5	2.33	3.00	1.390	1.732
Behavior 7: I watch TV while feeding my child.	1-5	1-5	2.43	2.23	1.326	1.363

Behavior 8: I try to get my child to eat even if s/he seems not hungry.	1-5	1-5	1.86	1.85	1.062	1.214
Behavior 9: I am very careful not to feed my child too much.	1-5	1-5	2.57	3.08	1.363	1.706
Behavior 10: When my child cries, I immediately feed him/her	1-5	1-4	3.14	2.62	1.590	1.325
Behavior 11: If my child seems full, I encourage him/her to finish his/her food anyway.	1-4	1-4	1.52	1.62	.873	.961
Behavior 12: My child knows when s/he is full.	1-5	2-5	4.62	4.46	.921	.877
Behavior 13: I try to get my child to finish his/her breastmilk or formula.	1-5	1-4	2.24	2.00	1.338	1.291
Behavior 14: I allow my child to eat in front of the TV to stop him/her from crying or being fussy.	1-3	1-4	1.24	1.38	.539	.961
Behavior 15: I pay attention when my child seems to be telling me that s/he is full or hungry.	4-5	4-5	4.90	4.92	.301	.277
Behavior 16: I allow my child to eat when s/he is hungry.	4-5	5	4.95	5.00	.218	.000
Behavior 17: My child knows when s/he is hungry.	4-5	4-5	4.90	4.85	.301	.376
Behavior 18: I talk to my child to encourage him/her to drink his/her formula or breastmilk.	1-5	1-5	3.38	3.38	1.687	1.710

Pressuring style. Data was further collected to help to determine if there was a change in the following parenting styles: pressuring, restrictive, laissez-faire, responsive, and indulgent. When evaluating parental beliefs of pressuring feeding practices a *paired sample t-test* (Pre-M=3.54, SD= 1.13/Post-M=3.23, SD=1.59) looked at the pre and post pressuring belief items of the 13 parents who completed both surveys. The results showed (t=.00, p=1.0) there was no statistically significant difference in pre and post pressuring style beliefs between the parental surveys. A correlation analysis of parental pressuring behaviors showed that there was no statistically significant difference between pre and post pressuring behaviors (r = -.065, n = 13, p = .833).

Restrictive style. A *paired sample t-test* (Pre-M = 4.31, SD = 1.18/Post-M = 4.15, SD = 1.21) looked at pre and post parental restrictive beliefs. The results showed (t = .77, p = .46) no statistically significant difference between pre and post restrictive beliefs. However, when looking at pre and post restrictive parental feeding behaviors, a correlation analysis found a statistically significant difference that indicated parents had more agreement with restrictive behaviors after the intervention at the two-month follow up compared to their behaviors at the initial newborn visit (r = .835, n = 13, p =.000). A p < .05 was used to determine clinical significance.

Laissez-faire style. A *paired sample t-test* (Pre-M = 4.46, SD = 1.13/Post-M = 4.46, SD = .87) looked at pre and post Laissez-faire style parental beliefs. The results showed (t = .81, p = .44) that parents had no statistically significant change in their belief of Laissez-faire parenting styles. A correlational analysis on pre and post parental Laissez-faire behaviors showed no statistically significant change in Laissez-faire behaviors (r= .483, n = 13, p = .833).

Responsive style. A *paired sample t-test* (Pre-M = 5.00, SD = .00/Post-M = 4.92, SD = .28) was used to look at pre and post responsive parental beliefs. This result showed (t = 1.0, p = .34) that there was no statistically significant difference in parental pre and post responsive beliefs. Although not statistically significant, parental beliefs became slightly less responsive at the two-month appointment compared to the initial newborn visit. There was no statistical significance between pre and post responsive feeding beliefs and behaviors (r = .542, n = 13, p =.06).

Indulgent style. To look at the pre and post parental indulgent feeding beliefs a *paired sample t-test* (Pre-M = 3.38, SD = 1.81/Post-M = 3.38, SD = .71) was used. The

results indicate that there was no change in indulgent (t = 1.0, p = .34) feeding beliefs. A correlation analysis showed a statistically significant increase in indulgent parental feeding behaviors at the two-month follow (r = .677, n = 13, p =.01). This result indicates that parents agreed more with indulgent feeding behaviors, despite no change in indulgent feeding beliefs. A $p < .05$ was set as the level of statistical significance.

9. *Did increased education of responsive feeding practices correlate to normal infant growth trajectories?*

There was no correlation found between responsive feeding practices and infant weight gain with most feeding styles (r = .109, n = 13, p = .763). No correlation was found between restrictive feeding practices and infant weight gain (r = -.262, n = 13, p = .465). There was no correlation found between pressuring feeding practices and infant weight gain (r = -.379, n = 13, p = .280).

There was statistical significance between Laissez-faire feeding practices and decreased infant weight gain (r = -.798, n = 13, p = .006). This result indicates that as Laissez-faire feeding styles were implemented more by parents, the infants' weight gain correlated to less gain compared to other feeding practices. Infants' weight at birth had a mean of 7.38 pounds and length of 20.10 inches (n = 12). The mean weight of infants at their two-month follow up was 11.41 pounds with a mean length of 22.56 inches (n = 12). This result would make the mean weight-to-length percentile for the infants around the fiftieth percentile according to the WHO growth standards for both girls and boys ages birth through 24 months (CDC, 2010). The two-month well child visit mean weight of 11.4 pounds and a mean length of 22.56 inches would put infants around the sixty-second percentile according to the WHO child growth standards (CDC, 2010).

Summary

This project had two parts. The first part was to have an educational offering to increase healthcare provider's understanding of responsive feeding practices and determine their current use of responsive feeding education to parents of newborns. Analysis of results indicated that most providers felt that their understanding of responsive feeding practices increased because of the educational offering and most also felt that the topic was important to their practice and that more education on responsive feeding is needed for parents. Prior to the educational offering, most providers reported educating parents of newborns about responsive feeding 25% to 50% of the time. After the educational offering and at the conclusion of parental data collection, most providers responded that they provided education 75% of the time, an increase from the prior 25% to 50% range. With the conclusion of the project's educational intervention utilizing an educational brochure for parents, most providers responded that they were likely to continue to incorporate responsive feeding education into their routine practice responding between 50% and 75% of the time.

The second part of the project focused on parental feeding style beliefs and behaviors. Data analysis of parental surveys found that there was about a 62% follow up rate at the two-month well child visit. This was an unexpected finding and raises concern that there was such a high volume of infants who transferred care before their two-month visit with their established primary care provider. Those participants that did complete the pre and post surveys showed that parental beliefs and behaviors about responsive styles did not change significantly from the initial visit compared to the two-month visit. One significant change that was found was that parents were found to be in more

agreement with beliefs and practices that correlated to restrictive practices at the follow up visit compared to the initial visit. The only feeding style that was found to have any statically significant change on infant weight was Laissez-Faire. This feeding style correlated to less weight gain when compared to the other feeding styles.

Chapter V

Discussion

This project was designed with the purpose of helping to increase education to parents of newborns on the importance of responsive feeding practices. An educational brochure was developed presenting responsive feeding guidelines for parents. In order to bring this education to parents, a quality improvement project was designed that sought to inform healthcare providers through an educational offering that discussed current responsive feeding guidelines for infants. The educational offering also served to gather some data to help understand providers' current use and beliefs about responsive feeding as it pertained to their practice. Next, the project focused on gathering data on eligible neonatal parental participants and relating their beliefs and behaviors to feeding styles prior to receiving responsive feeding education and again at the infants' two-month well child appointment. Parental data collection was used to determine if there were any differences in parent beliefs and behaviors after receiving the educational tool and to see if certain feeding styles correlated to any differences in the child's growth trajectory over a two-month time frame. The final part of the project looked at provider satisfaction, how providers believed they incorporated responsive feeding into their practice after the interventional portion of the project, and how they believed they would continue to incorporate this education in the future.

Relationship to Outcomes of Research and Observation

Demographics

Healthcare Providers. Only 12 participants attended the educational offering in total, which was a lower number than expected. The original arrangements made with the health clinic was estimated for approximately 20 healthcare providers to attend the offering. There were three family practice providers and two medical assistants that were absent from the educational offering due to being behind in clinical responsibilities that they were not able to leave at the time of the scheduled offering. The absence of providers and support staff could have influenced how the project was handled. Lack of education on the project could potentially affect how providers interact with parental project participants and affect providers' attitude and belief toward the project goals.

There was a diverse range of healthcare providers that participated in the project. About 25% of providers that attended the educational offering were MDs, while a larger majority, 33%, were NPs and one provider was a PA. There were two pediatric registered nurses who also attended. With different types of healthcare providers, the occurrence of different educational backgrounds was an intended finding. All the physicians in attendance were MDs and all the NPs and the PA held a master's degree. The level of experience of the educational offering participants also varied, with most providers having zero to five years of clinical experience in their role; however, 30% had over 10 years of experience.

More provider participation would have been favorable for the project outcomes. For this project, the change champion was a BSN-prepared RN who oversaw the

operations of the project through day-to-day workflow. It may be possible that incorporating a DNP or MSN-prepared nurse for the project implementation into the clinic setting would have resulted in more participant involvement. According to Sherwood & Barnsteiner (2017) doctoral-prepared nurses may be better suited to lead quality improvement initiatives related to their higher level of training. It is also possible that more agency support for the project and its initiation may have increased participation. There was difficulty in scheduling a time for a single educational offering for healthcare providers. If the education offering could have been offered multiple times allowing more convenience for providers to attend, this potentially would have resulted in higher levels of participation.

Parental Participants. Most of the parents that participated in the project fell into an age range of 18-26 years. About 85% of parents were White while only 14% were of Hispanic/Latino ethnicity. All infants were healthy, term newborns, and over 65% of them were breastfed to some degree, either exclusively or both breast and bottle fed. The overall level of breastfeeding is much lower than the Healthy People 2020 goal that prefers to see 81.9% of infants breastfed (CDC, 2018c). In 2016, the state of Kansas had an 83.8% rate of ever being breastfed, this had increased from 2014 which had a 72.9% breastfeeding rate at that time (High 5 For Mom & Baby, 2016). According to the Conduent Health Communities Institute (2020), of mothers that participated in WIC during 2017 in Crawford County, Kansas, only 13.9% of mothers exclusively breastfed. Forty-seven percent of the project parents reported breastfeeding, a significant increase from the WIC population. It could be possible that such a small sample of parental

participants did not account for the generalized population, or there could be other factors not accounted for.

Of the parents that participated, 64% percent were not first-time parents, possibly suggesting that they had already been through the developmental phases from the neonatal period into infancy. It was not expected that only 66% of parents reported that they had received responsive feeding education prior to the educational intervention portion of the project. With current guidelines strongly supporting responsive feeding (Robert Wood Johnson Foundation, 2017), it would have been preferable to see that all had received some form of education prior to hospital discharge after birth. It is likely that the 66% of parents that received responsive feeding education also fell into the 64% of experienced parents that have most likely received education from parenting a prior child.

An unexpected finding was the mobility of the patient population as seen in the low two-month follow up rate due to a high volume of patient's transferring care elsewhere in the community. There was a total of 21 participants for the initial survey. Only 13 of those participants completed follow up two months later. Seven of the eight participants who dropped out of the project transferred care to another primary care provider, and one participant refused to complete the post survey due to appointment time constraints. It should be questioned why such a high volume of patients are transferring care, as this can cause difficulty establishing rapport and a trusting relationship with a primary care provider. Trust is an essential component of the healthcare provider and patient relationship, and without trust, safety and quality become major concerns for the patient (Choy & Ismail, 2017). Trust is seen as a vital component that plays a key role in

minimizing medical negligence, lawsuits, and patient complaints about their healthcare provider (Choy & Ismail, 2017). While it is not known why such a large portion of patients transferred care, this is an important finding worthy of further inquiry. Despite the parental population's high degree of mobility, early education on feeding practices should have continuity across all healthcare provider's routine practices. While parents may change their child's healthcare provider, the evidence-based guidelines supporting feeding practices does not change and should be incorporated into all neonatal and infant care settings.

Increased Provider Understanding and Belief of Importance of Responsive Feeding to Practice

Most providers agreed that their understanding of the importance that responsive feeding practices have on the prevention of childhood obesity among infants increased as a result of the educational offering. They also shared the belief that more responsive feeding education is needed for parents. There was not as strong a level of agreement however, on how important responsive feeding practices were to their own healthcare practice. The results helped to understand both providers' understanding and their belief of importance to their practice is both encouraging and concerning at the same time. It is encouraging that providers can identify that responsive feeding approaches used with newborns and infants by parents are a key element towards producing healthy eating behaviors as these children grow. It is concerning that providers do not feel that this topic is highly important. Providers averaged a perception response that responsive feeding had a level of importance that was between a neutral and agreement stance. No provider

found this topic highly important despite what current evidence and guidelines support (Robert Wood Johnson Foundation, 2017).

Perceiving this topic as not highly important may be due to current demands of neonatal appointments and the limited time slot that providers have. The limitation on providers' time spent with patients forces them to prioritize where they focus their attention during their appointments, and spending time on this topic may not fit into an already full schedule as there was no adjustment to providers' patient time slots during the implementation of the educational intervention phase of this project.

The educational offering did not quantify provider knowledge, which would be a more accurate measure of their level of understanding and provide a more in-depth measure of provider perception on the topic. Measuring provider knowledge could contribute to more insight on the participating healthcare providers' perceptions. A more thorough understanding of healthcare providers' perceptions on priorities during appointments may be a valuable area to further focus on. The results of this project demonstrate a need to improve provider perception on the importance of responsive feeding. Higher perceived levels of importance may help providers to invest more into adding this education into their regular practices and help to meet the overall goals of this project. This data is useful to help determine and guide future educational objectives to healthcare providers by having a better understanding of their perception on the topic of responsive feeding.

Machuca et al. (2016) overcame time constraints of individual appointments by utilizing a Well Baby Group intervention, where parents were enrolled in larger groups together with their infants, and education on feeding, nutrition, and responsive parenting

were offered in the group setting. These group settings could easily incorporate other resources to parents such as dietician and lactation consultants that could help offer parents easier access to these resources. The Well Baby Group setting had favorable results in the Machuca et al. (2016) study and offers a possible solution to healthcare providers in a SEK community health center.

Provider Education to Parents on Responsive Feeding Practices

Prior to the educational offering and before the educational intervention portion of the project was implemented, providers reported that they were educating parents on responsive feeding on average 37.5% of the time. This low level of education is a significant concern, especially since 44% of parents reported receiving no education prior to participation in this project. This raises further concern that these parents did not receive any hospital education prior to discharge after the birth of their child about responsive feeding. Current literature is also lacking studies to describe how often feeding education is being completed for parents of newborns. If parents are not receiving education at birth or at their first primary care provider appointment, it may be likely that they are not receiving it anywhere else along the way. The project's results demonstrate that it may be possible that parents are being left to their own devices to figure out methods of feeding or seeking guidance from other outside sources. This identifies a gap in evidence-based practice in healthcare, as is supported by the review of the literature and evidence-based feeding guidelines for newborns and infants.

Once the educational intervention was implemented at the community health clinic towards the end of parental data collection, providers were, on average, offering education to parents 75% of the time. This increase in education represents the success of

increasing education about responsive feeding by implementing the educational intervention; however, it would be favorable to see at least 90% education rates. This raises questions as to what barriers prevented education from being higher. There is concern of the accuracy of this data however, with the very small sample size of six providers responding, making it possible that this number is not an accurate representation of true practices. The instrument of data collection did not differentiate where the data was coming from. It did not consider if the provider was from pediatrics or from family practice which could affect how often feeding education is being completed. Adjusting the instrument to collect data on the provider's regular practice would have been beneficial to better understand this issue.

Once the project's educational intervention phase was completed, providers reported that they intend to continue to educate their patients in their regular practice about responsive feeding 62.5% of the time, on average. While this is much higher than educational rates prior to the intervention, this still represents an area for improvement. Instrument adjustments on the survey for this data collection would have benefited by addressing what barriers were found with implementing this project and what barriers would prevent future incorporation of responsive feeding education into routine practice, including time restraints during appointments or other unforeseen factors and circumstances.

Provider Project Satisfaction

All the providers that attended the educational offering reported being satisfied with it. Once the educational intervention had been implemented, providers also reported an average response of being satisfied with the educational brochure that was used for

educating parents. Open ended questions provided on the provider follow-up survey to gauge providers' opinions on the project could have been improved were largely not completed. Only one survey had an answer completed that the educational brochure was most liked and that the initial survey should have been more graduated to the neonatal population. Both parental surveys were the same on the pre and post portion. This represents a potential need for reevaluation and possible further validation of the surveys to better fit the intended population as they were adapted from a previous study by Thompson et al. (2009).

Increased Parental Use of Responsive Feeding Practices

A measure of parental style as it related to beliefs and behaviors about feeding practices was utilized prior to an educational intervention on responsive feeding, and then at the infants' two-month follow up appointment. There was not an increase found among responsive beliefs and behaviors; however, parents were in high agreement with responsive beliefs and behaviors prior to the education. It may be speculated that parents were already in agreement with responsive feeding since over 60% of the participants had reported already receiving education prior to the intervention.

An unexpected finding of this project was the lack of change toward the other non-responsive feeding styles. There was no change in Laissez-Faire style which presents a concern as this permissive feeding practice is characterized by low responsiveness and low demands, creating a hands-off approach to parenting (Van der Horst & Sleddens, 2017). There was also an increase in the indulgent feeding style which, while it is high in responsiveness, it has low demands of the child, creating a style that is completely led by the child with little direction from the parent (Van der Horst & Sleddens, 2017). As the

literature supports, the healthiest parenting style has both high responsiveness and high demandingness, as too much of either can have a negative effect on the child.

A more concerning finding was the increase in restrictive feeding practices from the initial newborn visit throughout the follow-up appointment. Overall, the restrictive style was found to be in higher use amongst parents at follow-up in relation to their feeding behaviors compared to the initial parental survey. This was found despite there being a slight but statistically insignificant lesser agreement with restrictive beliefs. This discrepancy between decreased restrictive beliefs but increased restrictive behaviors is concerning, considering that the evidence throughout literature strongly supports restrictive feeding practices as a significant risk factor for childhood obesity, and it can influence eating in the absence of hunger, alter what foods a child prefers, and does not allow the ability to learn self-regulation of restricted foods (Afonso et al., 2016; Bauer et al., 2017; Dev et al., 2013; Loth et al., 2016). It is possible that while the parents continued to develop their feeding practices with their infant, they may have mistaken restriction as a form of responsiveness. With the negative aspects associated with restrictive practices, this presents a clear need for more parental education on feeding their children. It may be more beneficial to include further education to parents on the different types of feeding styles and how they may affect a developing child.

Infant Growth Trajectories

Overall, the average infant growth trajectories of the project's participants followed normal development for the first two months of life. An average full-term newborn's weight and length is 7.5 pounds and 20 inches (Summit Medical Group, 2020). The average birth weight and length found among participants was 7.38 pounds

and 20.1 inches which is consistent with national norms. Participants had an average two-month weight of 11.41 pounds and length of 22.56 which also follows a normal growth rate of 1.5 to 2 pounds per month (Stanford Children's Health, 2020). This is a reassuring finding that overall, the population experienced a normal growth trajectory.

While the project's participating infants had consistent normal, healthy growth trajectories, infants whose parents were in higher use of Laissez-Faire style demonstrated lower rates of weight gain. Poor weight gain is defined as "gaining weight at a slower rate than other children who are the same age and sex" which weight gain is measured by the WHO standard growth charts for children less than two years of age (Motil & Duryea, 2020, How is Poor Weight Gain Defined section, para. 1). This is an interesting yet concerning finding given the importance of appropriate infant weight gain. The literature is robust with evidence that supports rapid infant weight gain as a significant risk factor for later childhood obesity (Braun et al., 2018; Ma et al., 2015; Nader et al., 2012; Oddy et al., 2014; Penny et al., 2016; Willik et al., 2015), but the evidence is less clear on slower rates of weight gain. Infants may gain weight slower than normal due to undernutrition or to an underlying medical condition that may need treatment (Motil & Duryea, 2020). It may be speculated that infants who were exposed to higher levels of the Laissez-Faire style of parenting and gained less weight than infants who were exposed to lower levels of Laissez-Faire styles experienced potential undernutrition during feeding because of the more hands off approach during parental interaction with the child.

Infants who need treatment for poor weight gain often need to "catch up" to what a normal weight for them should be and may require that parents change feeding habits including feeding schedule, feeding environment, or the actual diet (Motil & Duryea,

2020). This poses a potential concern that less responsive styles may be incorporated that encompasses strict feeding schedules that are determined by the parent, pressuring to finish eating, and other non-responsive feeding practices rather than create a more responsive environment. It may be concluded that these findings emphasize the importance of a responsive feeding environment and that more education is necessary on the negative effects of other non-responsive feeding practices.

Evaluation of Theoretical Framework

This project's main objective was to utilize responsive feeding as an educational intervention as a primary prevention strategy for childhood obesity since obesity is difficult to resolve once it sets in. Betty Neuman's Systems Model considers a client as a single system that is responding to multiple stressors in the environment (Alligood, 2014). Any variable is accounted for in this model whether it be physiological, psychological, sociocultural, developmental, or spiritual. Each client system is protected by lines of resistance that when broken can move the client from normal health to a state of illness (Alligood, 2014). The stressors may be internal, external, or environmental. When focusing on primary prevention of childhood obesity, all possible stressors must be considered. External stressors of the parent's role in a child's life plays a role on internal stressors such as the child's ability to learn to self-regulate and respond to their own hunger and satiety cues. The environment that the child is exposed to also holds its own stressors that affect the child's health, and as supported by responsive feeding guidelines, is a modifiable stressor that can be established to favor wellness and minimize negative effects for the child's system. Obesity is such a multifaceted disease and effective primary prevention measures are going to have to consider all system variables and

stressors making this model an appropriate choice in concept, however this project did not test the Systems Model.

The Stages of Transtheoretical Model of Health Behavior Change was utilized during the implementation of the educational intervention into practice at a community health center in SEK. While the five stages of precontemplation, contemplation, preparation, action, and maintenance were utilized throughout this project, more involvement of the community health staff in the preparation phases could have possibly improved compliance towards the project's goals. One pediatrician and one pediatric RN were involved in helping to prepare the project's implementation into clinical practice. The pediatric RN was the project's champion and oversaw most of the operation of identifying eligible project participants and assisted in obtaining completed parental surveys. It is possible that having involved a healthcare practitioner and RN from the family practice department may have helped to better incorporate that department into data collection. One participant packet was lost in family practice and not completed potentially because of the system that was implemented for data collection. The data collection process could have been improved had more involvement and voices amongst staff been heard from other departments prior to the beginning of data collection.

Overall, the results of this project support that the Transtheoretical Model of Health Behavior Change is an appropriate framework for guiding implementation of practice changes at the organizational level. This project also supports the importance of sequentially and thoroughly completing each stage starting at precontemplation and following through toward the maintenance stage to obtain the best results.

Evaluation of Logic Model

This project informed participating healthcare providers of responsive feeding guidelines for infant ages zero to six months through an educational offering. A practice bundle of responsive feeding guidelines was implemented to design and generate an educational brochure that was utilized throughout the project to educate parental participants. Data were collected on parental feeding beliefs and behaviors prior to receiving the educational brochure and again at the infants two-month follow up.

Results of this project support the short-term outcomes presented in the project's logic model of improving educational practices to parents on responsive feeding practices. Providers reported increases in the amount of education they provided to parents of newborns. The short-term outcomes of increased parental knowledge of responsive feeding were not supported by the logic model, as knowledge was not the data collected; instead, before and after feeding styles were assessed. The short-term outcome of increased parental use of responsive feeding practices was also not supported by the logic model as there was minimal change in the already high use of responsive feeding behaviors that were observed before the educational intervention.

Because of time limitations, medium-term and long-term outcomes could not be obtained. The logic model would require a longitudinal study design to assess all outcomes including what eating behaviors children developed as they grew older, and to assess if childhood obesity was reduced in the children of parents that received responsive feeding education. To truly assess if obesity is reduced in later childhood, there would also need to be a control group of participants that did not receive responsive

feeding education to compare results to the participants that did receive education.

Limitations

This project was originally designed to impact feeding education given to parents in the hospital directly following birth, but due to the acquired participation of a community health clinic in the primary care setting, the project was adapted to provide this education at the initial newborn visit with a primary care provider. It is possible that this education would have been better received in the postpartum period of the hospital stay, when parents are first establishing their feeding habits with their child compared to a busy initial appointment where vast amounts of information are covered, potentially making this topic a lower priority at the time.

Data collection during the project was first designed to originally start beginning in June of 2019 and was set to follow infants until their four-month follow up where the post survey would be collected. This would have allowed more meaningful data with an extended time to monitor growth trajectories. Scheduling conflicts of the participating health clinic did not allow an educational offering to be scheduled any sooner than August 20, 2019, therefore, to accommodate this change for time restraints, follow-up was decreased to the two-month well child appointment.

The instrument to gather parental data was adapted from a previous study, possibly limiting its effectiveness to the community health clinic's population. It may be beneficial to further adapt the parental survey to better fit the project's population, such as offering the survey in Spanish. The inclusion/exclusion criteria required that participants must have English as a primary language, limiting participation and affecting the data's generalizability. Also, shortening the parental survey should be considered so

that participants are not deterred from participating in the project because of the length and time it takes to complete the survey.

The project was greatly limited by the small sample size and the high mobility of the patient population that transferred care prior to the two-month follow up. There were 21 subjects that agreed to participate in the project, but with 7 of them transferring care elsewhere and one that did not participate in the follow-up survey the sample size was limited to only 13 participants eligible for data analysis. This greatly affects the generalizability of the results. Participants found the instrument to collect parental data to be lengthy, and the demands of caring for an infant while trying to complete the survey caused one participant to refuse to complete the post survey. This demonstrates a need for adjustment of the survey to either be shortened to better accommodate time limitations during appointment times or look to further deliver these surveys via email that allows more flexibility for participants to engage in the study.

The provider data obtained from this study was limited based on provider data being collected from self-reported answers. For this data to be more precise about how frequently providers are educating parents, chart audits should be studied. This would require that adequate documentation is placed within a patient's EMR, to allow data to be appropriately collected.

Implications for Future Projects

Future projects would benefit from having a better understanding of healthcare providers' knowledge of the project guidelines. Testing provider knowledge of the guidelines would give more accurate data about their understanding compared to self-

reported data. It would also be helpful to have a thorough understanding of all the education providers are giving to parents at the initial newborn visit, prior to implementing the project's educational intervention. This would help the researcher to better plan how to effectively incorporate the practice implementation changes. Prior to replicating this project, having more staff input would help to engage staff better, possibly contributing to more compliance from all participating departments. To better understand the community clinic population, it may be best to do some chart reviews on demographics of patients to help adapt the survey instrument accordingly. The community clinic, overall, had a large Hispanic population that did not speak English as a primary language and offering the survey in Spanish would have helped to incorporate a larger set of data that would be more generalizable to the population.

Future projects on this topic should continue to strive to implement responsive feeding education to parents as children grow. This project focused on education for parents to be provided at birth. Education should continue to be provided about how to responsively add complementary foods into the child's diet and also include education from responsive guidelines that encompass children ages six months through the first two years. This further education will help parents to establish healthy eating behaviors in their child throughout the first two years of life which is supported in the literature as a critical developing timeframe of eating behaviors that may follow the child throughout their life span.

Implications for Practice/Health Policy/Education

This project sought to decrease childhood obesity by increasing education to parents of newborns about responsive feeding practices using a teaching brochure that

was supported by current responsive feeding guidelines for infants. The education brochure can be utilized beyond the community health clinic where it was implemented. Birthing centers, primary care clinics, health departments, and Women Infants and Children (WIC) programs would be ideal institutions for this brochure to be used. Results from this project provide information to primary care providers and any caregiver providing direct care to children in the first few years of life. Evidence makes the value of implementing responsive feeding in early life and the impact that it has on the development of healthy eating habits in young children clear. These habits are the foundation of eating behaviors that will follow the child throughout life, making this a clear priority for healthcare providers to support. The results of this project will be useful to help other healthcare practices develop a plan to implement a practice change to incorporate responsive feeding guidelines that best supports their organization's environment.

Nursing education would benefit from adding content to their curriculum on the importance and impact that feeding practices have on newborns and infants and should further support why parents and child caregivers must be given appropriate information about nutrition in early life as eating habits are just starting to take shape. Improved education to nursing professionals at all levels can help to impact both APNs and RNs that provide care and education to parents of young children. With nursing being the largest employed profession in the healthcare industry, this makes increased education to nursing professionals on this topic an important step in helping establish primary prevention of childhood obesity (U.S. Bureau of Labor Statistics, 2015).

Policy changes to help decrease rates of childhood obesity should be aimed toward establishing responsive feeding beyond reaching parents and caregivers only through healthcare services, but also to extend the aim for responsive feeding to reach all care providers that offer services to young children, such as daycare centers or foster care programs. By implementing policy changes to support healthy eating habit development, any measures that help to prevent obesity on a primary level are highly important considering the medical expenses that obesity costs impede on healthcare with an estimated total cost in 2008 of $147 billion (CDC, 2018a). This makes initiatives aimed at preventing obesity from ever taking form worthy of further inquiry and investing maximum efforts toward developing a culture that supports evidence-based responsive feeding practices to be incorporated into early childhood.

Conclusion

This project implemented quality improvement initiatives to increase the education of responsive feeding practices to parents of newborns by developing an educational brochure supported by current responsive feeding guidelines. The participating rural community health clinic that volunteered to implement the practice change, received an educational offering that was provided to participating healthcare providers. After healthcare providers received the educational offering on responsive feeding guidelines and the implementation methodology was reviewed, parental data was collected on feeding styles prior to and post education at the infants two-month follow up.

While the evidence robustly supports the importance of responsive feeding to be initiated in early life, rural areas may be subjected to delays of implementing evidence-

based practice guidelines compared to more urban areas. This project did increase how often health care providers educated parents of newborn on the importance of feeding infants responsively. The information obtained from this project can help guide future projects that aim to implement responsive feeding practice changes. This project also demonstrates that more education on different feeding styles may be necessary, such as informing parents of the negative effects of non-responsive feeding styles. More education is needed for parents as children grow older, and responsive feeding guidelines support child feeding up to age two. The first two years are a critical time frame of growth and establishing behaviors that may last throughout the child's lifespan. Future work on the topic must assure that parents are receiving appropriate education that will help parents build the healthiest eating habits possible in their children. This will not only primarily prevent obesity, but it may build overall healthier communities one child at a time.

References

Afonso, L., Lopes, C., Severo, M., Santos, S., Real, H., Durao, C., Moreira, P., & Oliveira, A. (2016). Bidirectional association between parental child-feeding practices and body mass index at 4 and 7 y of age. *American Journal of Clinical Nutrition, 103(3),* 861-867. doi: 10.3945/ajcn.115.120824

AGREE Next Steps Cosortium. (2009). *The AGREE II Instrument* [Electronic version]. Retrieved from http://www.agreetrust.org/

Alligood, M. (2014). *Nursing theorist and their work* (8th ed.). St. Louis, MO: Elsevier

American Heart Association. (2016). *Reducing sugar-sweetened beverage consumption: A focus on sugar-sweetened beverage taxes*. Retrieved from http://www.heart.org/idc/groups/ahaecc-public/@wcm/@global/documents/downloadable/ucm_490766.pdf

Anderson, J., Hayes, D., & Chock, L. (2014). Characteristics of overweight and obesity at age two and the association with breastfeeding in Hawai' women, infants, and children (WIC) participants. *Maternal Child and Health Journal, 18(10),* 2323-2331. doi: 10.1007/s10995-013-1392-9.

Appleton, J., Laws, R., Russell, C., Fowler, C., Campbell, K., & Denney-Wilson, E. (2018). Infant formula feeding practices and the role of advice and support: An exploratory qualitative study. *BMC Pediatrics, 18*, 1-12. doi: 10.1186/s12887-017-0977-7

Bauer, K., Haines, J., Miller, A., Rosenblum, K., Appulgliese, D., Lumeng, J., & Kaciroti, N. (2017). Maternal restrictive feeding and eating in the absence of hunger among toddlers: A cohort study. *International Journal of Behavioral Nutrition and Physical Activity, 14*, 1-10. doi: 10.1186/s12966-017-0630-8

Blaine, R. E., Davison, K. K., Hesketh, K., Taveras, E. M., Gillman, M. W., & Benjamin Neelon, S.E. (2015). Child care provider adherence to infant and toddler feeding recommendations: Findings from the baby nutrition and physical activity self-assessment for child care (baby NAP SACC) study. *Childhood Obesity, 11*(3), 304-313. doi: http://library.pittstate.edu:2143/10.1089/chi.2014.0099

Blissett, J., & Bennett, C. (2013). Cultural differences in parental feeding practices and children's eating behaviours and their relationships with child BMI: A comparison of Black Afro-Caribbean, White British and White German samples. *European Journal of Clinical Nutrition, 67*, 180-184. doi:10.1038/ejcn.2012.198

Boles, R., Reiter-Purtill, J., & Zeller, M. (2013). Persistently obese youth: Interactions between parenting styles and feeding practices with child temperament. *Clinical Pediatrics, 52*, 1098-1106. doi:10.1177/0009922813497091

Boucher, N. (2014). Feeding styles and the body weight status of preschool-aged children. *The Journal for Nurse Practitioners, 10(4)*, 234-239. doi: http://dx.doi.org/10.1016/j.nurpra.2014.01.018

Branch, J., Appugliese, D., Rosenblum, K., Miller, A., Lumeng, J., & Bauer, K. (2017). Feeding and mealtime correlates of maternal concern about children's weight.

Journal of Nutrition Education and Behavior, 49, 490-496. doi:10.1016/j.jneb.2017.03.011

Braun, J., Kalkwarf, H., Papandonatos, G., Chen, A. & Lanphear, B. (2018). Patterns of early life body mass index and childhood overweight and obesity status at eight years of age. *BMC Pediatrics, 18*, 1-8. https://doi.org/10.1186/s12887-018-1124-9

Brewis, S. SturtzSreetharan, C., & Wutich, A. (2018). Obesity stigma as a globalizing health challenge. *Globalization and Health, 14,* 20. http://doi.org/10.1186/s12992-018-0337-x

Brotman, L.M., Dawson-McClure, S., Huang, K., Theise, R., Kamboukos, D., Wang, J., Petkova, E., & Ogedegbe, G. (2012). Early Childhood Family Intervention and Long-term Obesity Prevention Among High-risk Minority Youth, *Journal of Pediatrics,129(3)*: e621-e628. doi:10.1542/peds.2011-1568

Center for Disease Control and Prevention. (2018a). *Adult obesity causes & consequences.* Retrieved from https://www.cdc.gov/obesity/adult/causes.html

Centers for Disease Control and Prevention. (2018b). *Defining childhood obesity.* Retrieved from https://www.cdc.gov/healthyweight/assessing/bmi/index.html

Centers for Disease Control and Prevention. (2018c). *CDC releases 2018 breastfeeding report card.* Retrieved from https://www.cdc.gov/media/releases/2018/p0820-breastfeeding-report-card.html

Centers for Disease Control and Prevention. (2017). *Childhood obesity facts*. Retrieved from https://www.cdc.gov/healthyschools/obesity/facts.htm

Center for Disease Control and Prevention. (2016). *Overweight & obesity.* Retrieved from https://www.cdc.gov/obesity/childhood/defining.html

Center for Disease Control and Prevention. (2014*). Breastfeeding report card: United States/2014.* Retrieved from https://www.cdc.gov/breastfeeding/pdf/2014breastfeedingreportcard.pdf

Center for Disease Control and Prevention. (2010). WHO growth standards are recommended for use in the U.S. for infants and children 0 to 2 years of age. Retrieved from https://www.cdc.gov/growthcharts/who_charts.htm#The%20WHO%20Growth%20Charts

Clark H.R., Goyder E, Bissell P, Blank L, & Peters J. (2007). How do parents' child-feeding behaviours influence child weight? Implications for childhood obesity policy. *Journal of Public Health*, 29*(2*):132–141.

Choy, H. H., & Ismail, A. (2017). Indicators for Medical Mistrust in Healthcare-A Review and Standpoint from Southeast Asia. *The Malaysian Journal of Medical Sciences: MJMS, 24(6),* 5–20. https://doi.org/10.21315/mjms2017.24.6.2

Coleman-Jensen, A., Rabbitt, M., Gregory, C., & Singh, A. (2018). *Household food security in the United States in 2017.* ERR-256, U.S. Department of Agriculture, Economic Research Service.

Conduent Healthy Communities Institute. (2020). *Percent of WIC mothers breastfeeding exclusively*. Retrieved from

http://www.kansashealthmatters.org/indicators/index/view?indicatorId=1374&periodId=242&localeId=958

Daniels, L.A., Mallan, K.M., Nicholson, J.M., Thorpe, K., Nambiar, S., Mauch, C.E., & Magarey, A. (2015). An early feeding practices intervention for obesity prevention. *Pediatrics, 136*, e40-e49. doi: 10.1542/peds.2014-4108

Dattilo, A. M., Birch, L., Krebs, N. F., Lake, A., Taveras, E. M., & Saavedra, J. M. (2012). Need for early interventions in the prevention of pediatric overweight: A review and upcoming directions. *Journal of Obesity*, 2012, 1-18. http://doi.org/10.1155/2012/123023

Davidson, K., & Vidgen, H. (2017). Why do parents enroll in a childhood obesity management program?: A qualitative study with parents of overweight and obese children. *BMC Public Health, 17*, 159. http://doi.org/10.1186/s12889-017-4085-2

Dev, D., McBride, B., Fiese, B., Jones, B., & Cho, H. (2013). Risk factors for overweight/obesity in preschool children: An ecological approach. *Childhood Obesity, 9(5)*, 399-408. doi:10.1089/chi.2012.0150

Farlex. (2003-2019). *The free dictionary: toddler.* Retrieved from https://www.thefreedictionary.com/toddler

Freese, B. & Lawson, T. (2007). *Systems model*. Retrieved from https://nursekey.com/systems-model/

Fryar, C., Carroll, M., & Ogden, C. (2016). *Prevalence of high weight-for-recumbent length among infants and toddlers from birth to 24 months of age: United States,*

1971-1974 through 2013-2014. Retrieved from https://www.cdc.gov/nchs/data/hestat/high_weight_recumbent_2013-14/high_weight_recumbent_length_2013_14.pdf

Gentile, N., Cristiani, V., Lynch, B., Wilson, P., Weaver, A., Rutten, L., … Kumar, S. (2016). The effect of an automated point of care tool on diagnosis and management of childhood obesity in primary care. *Journal of Evaluation in Clinical Practice, 22,* 962-968. doi:10.1111/jep.12572

Gonzalo, A. (2011). *Betty Neuman: The Neuman systems model*. Retrieved from http://nursingtheories.weebly.com/betty-neuman.html

Hahn, S. (2009). Patient-centered communication to assess and enhance patient adherence to glaucoma medication. *Ophthamology, 116(11),* S37-S42.

Harvard T.H. Chan. (2017). Obesity prevention source. Retrieved from https://www.hsph.harvard.edu/obesity-prevention-source/obesity-consequences/economic/

Helle, C., Hillesund, E.R., Omholt, M.L., & Overby, N.C. (2017). Early food for future health: A randomized controlled trial evaluating the effect of an eHealth intervention aiming to promote healthy food habits from early childhood. *BMC Public Health, 17*, 1-12. doi: 10.1186/s12889-017-4731-8

High 5 For Mom & Baby. (2016) *Breastfeeding rates in Kansas.* Retrieved from http://www.high5kansas.org/breastfeeding-rates.html

Hughes, S., Power, T., O'Connor, T., Fisher, J., & Chen, T. (2016). Maternal feeding styles and food parenting practices as predictors of longitudinal changes in weight

status in Hispanic preschoolers from low-income families. *Journal of Obesity, 2016*, 1-9.

Imai, C., Gunnarsdottir, I., Thorisdottir, B., Halldorsson, T., & Thorsdottir, I. (2014). Associations between infant feeding practice prior to six months and body mass index at six years of age. *Nutrients, 6*, 1608-1617. doi:10.3390/nu6041608

Institute of Medicine (IOM). (2011). Early Childhood Obesity Prevention Policies. *Advances in Nutrition, 3 (1).* Washington, DC: The National Academies Press. Retrieved from http://www.nap.edu/read/13124/chapter/1

Jansen, E., Mallan, K., Nicholson, J.M., & Daniels, L.A. (2014). The feeding practices and structure questionnaire: Construction and initial validation in a sample of Australian first-time mothers and their 2-year olds. *International Journal of Behavioral Nutrition and Physical Activity, 11*, 1-13

Kelsey, M., Zaepfel, A. Bjornsta, P., & Nadeau, K. (2014). Age-related consequences of childhood obesity. *Gerontology, 60(3),* 222-228. doi:10.1159/000356023

Kiefner-Burmeister, A., Hoffmann, D., Zbur, S. & Musher-Eizenman, D. (2016). Implementation of parental feeding practices: Does parenting style matter? *Public Health Nutrition, 19*, 2410-2414. doi:10.1017/S1368980016000446

Kral, T., Chittams, J., & Moore, R. (2017). Relationship between food insecurity, child weight status, and parent-reported child eating and snacking behaviors. *Journal for Specialist in Pediatric Nursing, 22(2)*, doi: https://doi.org/10.1111/jspn.12177

Langer, S., Seburg, E., JaKa, M., Sherwood, N., & Levy, R. (2017). Predicting dietary intake among children classified as overweight or at risk of overweight:

Independent and interactive effects of parenting practices and styles. *Appetite, 110*, 72-79. doi:10.1016/j.appet.2016.12.011

Lee, H., PhD., Andrew, M., PhD., Gebremariam, A., M.S., Lumeng, J. C., M.D., & Lee, Joyce M,M.D., M.P.H. (2014). Longitudinal associations between poverty and obesity from birth through adolescence. *American Journal of Public Health, 104*(5), e70-6. Retrieved from http://library.pittstate.edu:2048/login?url=http://search.proquest.com/docview/1524713366?accountid=13211

Lora, K., Hubbs-Taint, L., Ferris, A., & Wakefield, D. (2016). African-American and Hispanic Children's beverage intake: Differences in association with desire to drink, fathers' feeding practices, and weight concerns. *Appetite, 107*, 558-567. doi:10.1016/j.appet.2016.09.012

Loth, K.A., Friend, S., Horning, M.L., Neumark-Sztainer, D., & Fulkerson, J.A. (2016). Directive and non-directive food-related parenting practices: Associations between an expanded conceptualization of food-related parenting practices and child dietary intake and weight outcomes. *Appetite, 107*, 188-195. doi:10.1016/j.appet.2016.07.036

Ma, J., Zhou, L., Hu, Y., Liu, S., & Sheng, X. (2015). Associations between feeding practices and weight status in young children. *BMC Pediatrics, 15*, 1-10. doi: 10.1186/s12887-015-0418-4

Machuca, H., Arevalo, S., Hackley, B., Applebaum, J., Mishkin, A., Moonseog, H., & Shapiro, A. (2016). Well baby group care: Evaluation of a promising intervention

for primary obesity prevention in toddlers. *Journal of Childhood Obesity, 12*, 171-178. doi: 10.1089/chi.2015.0212

Melnyk, B. M., & Fineout-Overholt, E. (2015). *Evidence-based practice in nursing & healthcare: A guide to best practice* (3rd ed.). Philadelphia: Wolters Kluwer Health.

Motil, K.J., & Duryea, T.K. (2020). *Patient education: Poor weight gain in infants and children (Beyond the basics).* UpToDate. Retrieved February 28, 2020, from https://www.uptodate.com/contents/poor-weight-gain-in-infants-and-children-beyond-the-basics

Nader, P., Huang, T., Gahagan, S., Kumanyika, S., Hammond, R., & Christoffel, K. (2012). Next steps in obesity prevention: Altering early life systems to support health parents, infants, and toddlers. *Childhood Obesity, 8(3),* 195-204. doi:10.1089/chi2012.0004

Oddy, W., Mori, T., Huang, R., Marsh, J., Pennell, C., Chivers, P., …Beilin, L. (2014). Early infant feeding and adiposity risk: From infancy to adulthood. *Annals of Nutrition & Metabolism, 62*, 262-279. DOI: 10.1159/000365031

Ogden, C. L., Carroll, M. D., Kit, B. K., & Flegal, K. M. (2014). Prevalence of childhood and adult obesity in the United States, 2011–2012. *JAMA, 311*(8), 806–814. http://doi.org/10.1001/jama.2014.732

Pallewaththa, P., Agampodi, S. B., Agampodi, T. C., & Siribaddana, S. H. (2019). Knowledge, attitudes, and practices of responsive feeding in rural Sri Lanka (A Qualitative Study). *The Ceylon Medical Journal, 64(2),* 70–75. https://doi.org/10.4038/cmj.v64i2.8894

Penny, M., Jemenez, M., & Marin, M. (2016). Early rapid weight gain and subsequent overweight and obesity in middle childhood in Peru. *BioMed Central, 3*, 1-8. DOI 10.1186/s40608-016-0135-z

Power, T., Hughes, S., Goodell, L., Johnson, S., Duran, A., Williams, K., … Frankel, L. (2015). Feeding practices of low-income mothers: How do they compare to current recommendations? *International Journal of Behavioral Nutrition and Physical Activity, 12,* 1-11. doi: 10.1186/s12966-015-0179-3

Presidential Commission for the Study of Bioethical Issues. (2016). *Vulnerable populations in safeguarding children: Pediatric medical countermeasure research.* Retrieved from https://bioethicsarchive.georgetown.edu/pcsbi/sites/default/files/6%20Vulnerable%20Populations%20Safeguarding%20Children%209.30.16.pdf

Price, P.C, Jhangiani, R.S., & Chiang, C.A. (2015). *Research Methods in Psychology* (2nd ed). Retrieved from https://opentextbc.ca/researchmethods/chapter/quasi-experimental-research/

Reed, M., Cygan, H., Lui, K., & Mullen, M. (2015). Identification, prevention, and management of childhood overweight and obesity in a pediatric primary care center. *Clinical Pediatrics, 55(9):* 860-866. doi: 10.1177/0009922815614350

Robert Wood Johnson Foundation. (2017). *Feeding guidelines for infants and young toddlers: A responsive parenting approach.* Retrieved from http://healthyeatingresearch.org/wp-content/uploads/2017/02/her_feeding_guidelines_report_021416-1.pdf

Rollins, B., Loken, E., Savage, J., & Birch, L. (2014). Effects of restriction on children's intake differ by child temperament, food reinforcement, and parent's chronic use of restriction. *Appetite, 73,* 31-39. doi:10.1016/j.appet.2013.10.005

Russell, C. G., Taki, S., Azadi, L., Campbell, K. J., Laws, R., Elliott, R., & Denney-Wilson, E. (2016). A qualitative study of the infant feeding beliefs and behaviours of mothers with low educational attainment. BMC pediatrics, 16, 69. https://doi.org/10.1186/s12887-016-0601-2

Savage, J. S., Hohman, E. E., Marini, M. E., Shelly, A., Paul, I. M., & Birch, L. L. (2018). INSIGHT responsive parenting intervention and infant feeding practices: randomized clinical trial. *The International Journal of Behavioral Nutrition and Physical Activity*, *15*(1), 64. doi:10.1186/s12966-018-0700-6

Shankaran, S., Bann, C., Das, A., Lester, B., Bada, H., Bauer, C. R., & Higgins, R. D. (2011). Risk for obesity in adolescence starts in early childhood. *Journal of Perinatology, 31(11),* 711-716. http://dx.doi.org/10.1038/jp.2011.14

Sherwood, G., & Barnsteiner, J. (2017). *Quality and safety in nursing: A competency approach to improving outcomes*. Hoboken, NJ: Wiley Blackwell.

Shloim, N., Edelson, L. R., Martin, N., & Hetherington, M. M. (2015). Parenting styles, feeding styles, feeding practices, and weight status in 4–12 year old children: A systematic review of the literature. *Frontiers in Psychology, 6,* 1-20. http://doi.org/10.3389/fpsyg.2015.01849

Sosa, E., Mckyer, E., Pruitt, B., Goodson, P., & Castillo, L. (2015). The complexities of childhood obesity: A qualitative study among Mexican American mothers. *Journal of Health Disparities Research and Practice, 8(3):*28-41

Spence, A.C., Campbell, K.J., Crawford, D.A., McNaughton, S.A., & Hesketh, K.D. (2014). Mediators of improved child diet quality following a health promotion intervention: The Melbourne InFANT program. *International Journal of Behavioral Nutrition and Physical Activity, 11*, 1-11.

Stanford Children's Health. (2020). The growing child:1 to 3 months. Retrieved from https://www.stanfordchildrens.org/en/topic/default?id=the-growing-child-1-to-3-months-90-P02166

Steinsbekk, S., Belsky, J., & Wichstrom, L. (2016). Parental feeding and child eating: An investigation of reciprocal effects. *Child Development, 87*, 1538-1549. doi: 10.1111/cdev.12546

Summit Medical Group. (2020). *Growth: Normal.* Retrieved from https://www.summitmedicalgroup.com/library/pediatric_health/hhg_normalgrowth/

Swyden, K., Sisson, S., Morris, A., Lora, K., Weedn, A., Copeland, K., & DeGrace, B. (2017). Association between maternal stress, work status, concern about child weight, and restrictive feeding practices in preschool children. *Maternal Child Health Journal, 21*, 1349-1357. doi: 10.1007/s10995-016-2239-y

Tate, A., Trofholz, A., Rudasill, K. Neumark-Sztainer, D., & Berge, J. (2016). Does child temperament modify the overweight risk associated with parent feeding behaviors

and child eating behaviors?: An exploratory study. *Appetite, 101*, 178-183. doi:10.1016/j.appet.2016.02.026

Thompson, A. (2013). Intergenerational impact of maternal obesity and postnatal feeding practices on pediatric obesity. *Nutrition Reviews, 71*, S55-S61. doi:10.1111/nure.12054.

Thompson, A. L., Mendez, M. A., Borja, J. B., Adair, L. S., Zimmer, C. R., & Bentley, M. E. (2009). Development and validation of the Infant Feeding Style Questionnaire. *Appetite, 53(2),* 210–221. doi:10.1016/j.appet.2009.06.010

United States Bureau of Labor Statistics. (2015). *TED: The economics daily.* Retrieved from https://www.bls.gov/opub/ted/2015/registered-nurses-have-highest-employment-in-healthcare-occupations-anesthesiologists-earn-the-most.htm

United States Department of Agriculture. (2019). *Measurements*. Retrieved from https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/measurement.aspx

United States Preventive Services Task Force. (2015). *Final research plan for obesity in children and adolescents: Screening.* https://www.uspreventiveservicestaskforce.org/Page/Document/ResearchPlanFinal/obesity-in-children-and-adolescents-screening1

Van Der Horst, K., & Sleddens, E. (2017). Parenting styles, feeding styles and food-related parenting practices in relation to toddlers' eating styles: A cluster-analytic approach. *PLoS ONE 12*, 1-16. doi.org/10.1371/journal. pone.0178149

Von Hippel, P. T., & Nahhas, R. W. (2013). Extending the history of child obesity in the United States: The Fels Longitudinal Study, birth years 1930 to 1993. *Obesity (Silver Spring, Md.), 21(10),* 2153–2156. http//doi.org/10.1002/oby.20395

Wehrly, S., Bonilla, C., Perez, M., & Liew, J. (2014). Controlling parental feeding practices and child body composition in ethnically and economically diverse preschool children. *Appetite,73*, 163-171. doi:10.1016/j.appet.2013.11.009

Wells, N. M., Evans, G. W., Beavis, A., & Ong, A. D. (2010). Early childhood poverty, cumulative risk exposure, and body mass index trajectories through young adulthood. *American Journal of Public Health, 100*(12), 2507-12. Retrieved from http://library.pittstate.edu:2048/login?url=http://search.proquest.com/docview/804340246?accountid=13211doi:10.1007/s10900-012-9641-1

Willik, E., Vrijkotte, T., Altenburg, T., Gademan, M., & Holthe, J. (2015). Exclusively breastfed overweight infants are at the same risk of childhood overweight as formula fed overweight infants. *BMJ, 100*, 932-937. doi:10.1136/archdischild-2015-308386

Wood, C., Skinner, A., Yin, S., Rothman, R., Sanders, L., Delamater, A., & Perrin, E. (2016). Bottle size and weight gain in formula-fed infants. *Pediatrics, 138*, 1-7.

World Health Organization. (2019a). Newborns: reducing mortality. Retrieved from https://www.who.int/news-room/fact-sheets/detail/newborns-reducing-mortality

World Health Organization. (2019b). *HIV/AIDS*. Retrieved from https://www.who.int/hiv/pub/guidelines/arv2013/intro/keyterms/en/

World Health Organization. (2018). *Obesity and overweight*. Retrieved from http://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight

Xu H, Wen LM, Hardy LL, Rissel C. (2016). A 5-year longitudinal analysis of modifiable predictors for outdoor play and screen-time of 2- to 5-yearolds. *International Journal of Behavioral Nutrition and Physical Activity, 13(1):* 1-9

Zhang, J. Himes, J. Guo, Y., Jiang, J., Yang, L., Lu, Q., Ruan, H., & Shi, S. (2013). Birth weight, growth and feeding pattern in early infancy predict overweight/obesity status at two years of age: A birth cohort study of Chinese infants. *Plos One, 8*, 1-8.

Appendix

Appendix A:
Informed Consent

Congratulations on your new baby! If you are receiving this packet, you may be eligible for participation in this scholarly project developed for partial fulfillment of the requirements for the degree of Doctor of Nursing Practice from Pittsburg State University by the principle investigator Heather Burns, BSN-DNP Student.

Project Title: Preventing Childhood Obesity with Increased Education on Responsive Feeding Practices in Parents of Newborns in a Community Health Center.

Project Approval Date & Expiration Date: This project received approval from the Pittsburg State University Institutional Review Board on May 15, 2019 and will expire May 2020.

Contact for any Problems/Questions:

- **Principle Investigator**: Heather Burns, BSN-DNP Student. Email: responsivefeeding@gmail.com

Project Chair Contact Information:

- Kristi Frisbee, DNP. Associate Professor, Irene Ransom Bradley School of Nursing, 121 McPherson Hall, Pittsburg State University, Pittsburg KS 66762-7526, (620) 235-4434.

IRB Chair Contact:

- Brian Peery, Chair, Committee for the Protection of Human Research Subjects, 112 Russ Hall, Pittsburg State University, Pittsburg KS 66762-7526, (620) 235-4175

Purpose of the Research: The purpose of this study is to examine the use of responsive feeding practices used by parents/caregivers of newborns and infants.

Methods to be Used: After consent for participation is obtained, the project will have the participant(s) complete two questionnaires that will collect data on parental beliefs and use of responsive feeding practices. At the initial newborn visit, the first questionnaire

will be administered and followed by an educational handout explaining responsive feeding practices as it pertains to the prevention of childhood obesity. The questionnaire will be administered again at the child's two month well child visit. In addition to the two surveys, measurements of your child's weight and length will be collected at birth and each primary care office visit until two months of age, concluding data collection.

Length of Study: Participation will start from the initial newborn visit and conclude after completion of the two-month well child check.

Benefits Anticipated: Prevention of childhood obesity; establishment of healthy infant eating behaviors during early infancy.

Extent of Confidentiality: Your participation in this study is completely voluntary. No compensation will be provided for project participation. Upon consent for project participation, a participant number will be assigned to your questionnaires. Both questionnaires will not have any identifiable participant information. The only information that will be identifiable will be the signature to project consent. All signed and filled out forms will be kept by the principle investigator and CHC provider and nursing staff in a locked box that will only be accessible to participating clinic and project staff. Upon fulfillment of project and degree requirements, all forms will be destroyed through shredding by the principle investigator.

TERMS OF PARTICIPATION: I understand this project is research, and that my participation is completely voluntary. I also understand that if I decide to participate in this study, I may withdraw my consent at any time, and stop participating at any time without explanation, penalty, or loss of benefits or academic standing to which I may otherwise be entitled. I verify that my signature below indicates that I have read and understand this consent form, and willingly agree to participate in this study under the terms described, and that my signature acknowledges that I have received a signed and dated copy of this consent form.

Participant Name: _____

Participant Signature: _____ Date: _____

Witness to Signature: _____ Date: _____

Appendix B:
Study on Responsive Feeding Practices in Newborns

The following information is to be completed by office staff only:

Newborn's age_____

Current Weight_____ Current Length_____

Birth weight_____ Length at Birth_____

The remainder of the survey is to be completed by the newborn's parent/caregiver:

First, a few questions about you and your child:

How old are you? _____

What is your gender? **Male Female**

What is your ethnicity? **White____ Hispanic or Latino____ African American____ Native American/American Indian____ Asian/Pacific Islander____ Other____**

What is the primary language spoken in the home? **English Spanish Other_____**

Have you already received education on feeding your child? **Yes No**

Is this your first child? **Yes No**

Was your child considered full-term at birth? (at least 37 weeks gestation) **Yes No**

After delivery, did your newborn require an extended hospital stay for any reason? **Yes No**

Did your newborn require any intravenous (IV) administration of fluids, or antibiotics? **Yes No**

Excluding circumcision, did your newborn require any invasive procedures during hospital stay?

Yes No

What method are you using to feed your child?

Breastfeeding_____

Bottle feeding_____

Both breastfeeding and bottle feeding_____

Now, some questions on your <u>current beliefs</u> on feeding practices used with your newborn:

Please circle the most appropriate response.

1. When my infant cries it usually means he or she needs to be fed.

1 Strongly Disagree	2 Slightly Disagree	3 Neutral	4 Slightly Agree	5 Strongly Agree

2. An infant less than 6 months old needs more than formula or breastmilk to be full.

1 Strongly Disagree	2 Slightly Disagree	3 Neutral	4 Slightly Agree	5 Strongly Agree

3. I think it is okay to prop an infant's bottle.

1 Strongly Disagree	2 Slightly Disagree	3 Neutral	4 Slightly Agree	5 Strongly Agree

4. Putting cereal in the bottle is good because it helps an infant feel full.

1 Strongly Disagree	2 Slightly Disagree	3 Neutral	4 Slightly Agree	5 Strongly Agree

5. The best way to make an infant stop crying is to feed him or her.

1 Strongly Disagree	2 Slightly Disagree	3 Neutral	4 Slightly Agree	5 Strongly Agree

6. It's important for the parent to decide how much an infant should eat.

1 Strongly Disagree	2 Slightly Disagree	3 Neutral	4 Slightly Agree	5 Strongly Agree

7. It's important that an infant finish all of the milk in his or her bottle.

1	2	3	4	5
Strongly Disagree	Slightly Disagree	Neutral	Slightly Agree	Strongly Agree

8. An infant less than 6 months needs more than formula or breastmilk to sleep through the night.

1	2	3	4	5
Strongly Disagree	Slightly Disagree	Neutral	Slightly Agree	Strongly Agree

9. Cereal in the bottle will help an infant sleep through the night.

1	2	3	4	5
Strongly Disagree	Slightly Disagree	Neutral	Slightly Agree	Strongly Agree

10. An infant should never eat fast food.

1	2	3	4	5
Strongly Disagree	Slightly Disagree	Neutral	Slightly Agree	Strongly Agree

11. It's important that an infant be the one to set his or her own feeding schedule.

1	2	3	4	5
Strongly Disagree	Slightly Disagree	Neutral	Slightly Agree	Strongly Agree

12. It's important for an infant to eat at the same times every day.

1	2	3	4	5
Strongly Disagree	Slightly Disagree	Neutral	Slightly Agree	Strongly Agree

Now, questions on your <u>current feeding behaviors</u>:

Please circle the most appropriate response.

13. I let my child decide how much to eat.

1	2	3	4	5
Never	Seldom	Half of the time	Most of the time	Always

14. When my child has/had a bottle, I prop/propped it up.

1	2	3	4	5
Never	Seldom	Half of the time	Most of the time	Always

15. There is a TV on while my child is eating.

1	2	3	4	5
Never	Seldom	Half of the time	Most of the time	Always

16. I keep track of how much my child eats.

1	2	3	4	5
Never	Seldom	Half of the time	Most of the time	Always

17. I give/gave my child cereal in the bottle.

1	2	3	4	5
Never	Seldom	Half of the time	Most of the time	Always

18. I carefully control how much my child eats.

1	2	3	4	5
Never	Seldom	Half of the time	Most of the time	Always

19. I watch TV while feeding my child.

1	2	3	4	5
Never	Seldom	Half of the time	Most of the time	Always

20. I try to get my child to eat even if s/he seems not hungry.

1	2	3	4	5
Never	Seldom	Half of the time	Most of the time	Always

21. I am very careful not to feed my child too much.

1	2	3	4	5
Never	Seldom	Half of the time	Most of the time	Always

22. When my child cries, I immediately feed him/her.

1	2	3	4	5
Never	Seldom	Half of the time	Most of the time	Always

23. If my child seems full, I encourage him/her to finish his/her food anyway.

1	2	3	4	5
Never	Seldom	Half of the time	Most of the time	Always

24. My child knows when s/he is full.

1	2	3	4	5
Never	Seldom	Half of the time	Most of the time	Always

25. I try to get my child to finish his/her breastmilk or formula.

1	2	3	4	5
Never	Seldom	Half of the time	Most of the time	Always

26. I allow my child to eat in front of the TV to stop him/her from crying or being fussy.

1	2	3	4	5
Never	Seldom	Half of the time	Most of the time	Always

27. I pay attention when my child seems to be telling me that s/he is full or hungry.

1	2	3	4	5
Never	Seldom	Half of the time	Most of the time	Always

28. I allow my child to eat when s/he is hungry.

1	2	3	4	5
Never	Seldom	Half of the time	Most of the time	Always

29. My child knows when s/he is hungry.

1	2	3	4	5
Never	Seldom	Half of the time	Most of the time	Always

30. I talk to my child to encourage him/her to drink his/her formula or breastmilk.

1	2	3	4	5
Never	Seldom	Half of the time	Most of the time	Always

Thank you for your participation!

Please return this form to your healthcare provider.

Appendix C:
Study on Responsive Feeding Practices in Newborns and Infants

The following is to be completed by office staff only:

2 Month well child check: Weight _____ Length _____

We thank you for your participation in this responsive feeding study to help in the prevention of childhood obesity. This questionnaire will conclude your participation in this study. Please return to your healthcare provider when completed.

To be completed by parent/caregiver:

What method are you using to feed your child?

Breastfeeding_____

Bottle feeding_____

Both breastfeeding and bottle feeding_____

Now, some questions on your <u>current beliefs</u> on feeding practices used with your child:

Please circle the most appropriate response.

Please circle the most appropriate response.

1. When my infant cries it usually means he or she needs to be fed.

1 Strongly Disagree	2 Slightly Disagree	3 Neutral	4 Slightly Agree	5 Strongly Agree

2. An infant less than 6 months old needs more than formula or breastmilk to be full.

1 Strongly Disagree	2 Slightly Disagree	3 Neutral	4 Slightly Agree	5 Strongly Agree

3. I think it is okay to prop an infant's bottle.

1 Strongly Disagree	2 Slightly Disagree	3 Neutral	4 Slightly Agree	5 Strongly Agree

4. Putting cereal in the bottle is good because it helps an infant feel full.

1 Strongly Disagree	2 Slightly Disagree	3 Neutral	4 Slightly Agree	5 Strongly Agree

5. The best way to make an infant stop crying is to feed him or her.

1 Strongly Disagree	2 Slightly Disagree	3 Neutral	4 Slightly Agree	5 Strongly Agree

6. It's important for the parent to decide how much an infant should eat.

1 Strongly Disagree	2 Slightly Disagree	3 Neutral	4 Slightly Agree	5 Strongly Agree

7. It's important that an infant finish all of the milk in his or her bottle.

1 Strongly Disagree	2 Slightly Disagree	3 Neutral	4 Slightly Agree	5 Strongly Agree

8. An infant less than 6 months needs more than formula or breastmilk to sleep through the night.

1 Strongly Disagree	2 Slightly Disagree	3 Neutral	4 Slightly Agree	5 Strongly Agree

9. Cereal in the bottle will help an infant sleep through the night.

1 Strongly Disagree	2 Slightly Disagree	3 Neutral	4 Slightly Agree	5 Strongly Agree

10. An infant should never eat fast food.

1 Strongly Disagree	2 Slightly Disagree	3 Neutral	4 Slightly Agree	5 Strongly Agree

11. It's important that an infant be the one to set his or her own feeding schedule.

1	2	3	4	5
Strongly Disagree	Slightly Disagree	Neutral	Slightly Agree	Strongly Agree

12. It's important for an infant to eat at the same times every day.

1	2	3	4	5
Strongly Disagree	Slightly Disagree	Neutral	Slightly Agree	Strongly Agree

---

Questions on your <u>current feeding behaviors</u>:

Please circle the most appropriate response.

13. I let my child decide how much to eat.

1	2	3	4	5
Never	Seldom	Half of the time	Most of the time	Always

14. When my child has/had a bottle, I prop/propped it up.

1	2	3	4	5
Never	Seldom	Half of the time	Most of the time	Always

15. There is a TV on while my child is eating.

1	2	3	4	5
Never	Seldom	Half of the time	Most of the time	Always

16. I keep track of how much my child eats.

1	2	3	4	5
Never	Seldom	Half of the time	Most of the time	Always

17. I give/gave my child cereal in the bottle.

1	2	3	4	5
Never	Seldom	Half of the time	Most of the time	Always

18. I carefully control how much my child eats.

1	2	3	4	5
Never	Seldom	Half of the time	Most of the time	Always

19. I watch TV while feeding my child.

1	2	3	4	5
Never	Seldom	Half of the time	Most of the time	Always

20. I try to get my child to eat even if s/he seems not hungry.

1	2	3	4	5
Never	Seldom	Half of the time	Most of the time	Always

21. I am very careful not to feed my child too much.

1	2	3	4	5
Never	Seldom	Half of the time	Most of the time	Always

22. When my child cries, I immediately feed him/her.

1	2	3	4	5
Never	Seldom	Half of the time	Most of the time	Always

23. If my child seems full, I encourage him/her to finish his/her food anyway.

1	2	3	4	5
Never	Seldom	Half of the time	Most of the time	Always

24. My child knows when s/he is full.

1	2	3	4	5
Never	Seldom	Half of the time	Most of the time	Always

25. I try to get my child to finish his/her breastmilk or formula.

1	2	3	4	5
Never	Seldom	Half of the time	Most of the time	Always

26. I allow my child to eat in front of the TV to stop him/her from crying or being fussy.

1	2	3	4	5
Never	Seldom	Half of the time	Most of the time	Always

27. I pay attention when my child seems to be telling me that s/he is full or hungry.

1	2	3	4	5
Never	Seldom	Half of the time	Most of the time	Always

28. I allow my child to eat when s/he is hungry.

1	2	3	4	5
Never	Seldom	Half of the time	Most of the time	Always

29. My child knows when s/he is hungry.

1	2	3	4	5
Never	Seldom	Half of the time	Most of the time	Always

30. I talk to my child to encourage him/her to drink his/her formula or breastmilk.

1	2	3	4	5
Never	Seldom	Half of the time	Most of the time	Always

Thank you for your participation!

Appendix D:
Educational Offering Provider and Nursing Staff Survey

The following collected data will be analyzed to better understand the healthcare provider's demographic information as it relates to their beliefs and satisfaction with the project's goals and objectives.

1. What are your credentials as a healthcare provider?
   Physician_____
   Nurse Practitioner_____
   Physician's Assistant_____
   Other_____

2. What is your highest level of education, and what, if any, specialized credentials do you hold?

   _____

3. How long have you been practicing in your current role?
   0-5 years_____
   5-10 years_____
   10-15 years_____
   Over 15 years_____

4. I am currently providing education to parents of newborns and infants on responsive feeding practices.

0% of the time	25% of the time	50% of the time	75% of the time	100% of the time

5. I believe responsive feeding practices is important to my practice.

1 **Not Important**	2	3	4	5 **Highly Important**

6. I believe that more parental education is needed on responsive feeding practices of newborns and infants.

1 **Disagree**	2	3	4	5 **Agree**

7. This educational offering has increased my understanding on the importance of responsive feeding practices in infants and the prevention of childhood obesity.

1 **Disagree**	2	3	4	5 **Agree**

8. I am satisfied with this educational offering.

1 **Disagree**	2	3	4	5 **Agree**

Appendix E:
Provider Follow-up Survey

Thank you for participating in this scholarly project aimed at improving the education of responsive feeding to parents of newborns. Your participation and feedback are greatly appreciated. Please complete this brief survey by circling the most appropriate response to help provide valuable feedback for this study.

1. After the educational intervention, do you provide responsive feeding education to parents of newborns?

0% of the time	25% of the time	50% of the time	75% of the time	100% of the time

2. How satisfied were you with the teaching education provided to parents of newborns?

1 Highly Dissatisfied	2 Dissatisfied	3 Neutral	4 Satisfied	5 Highly Satisfied

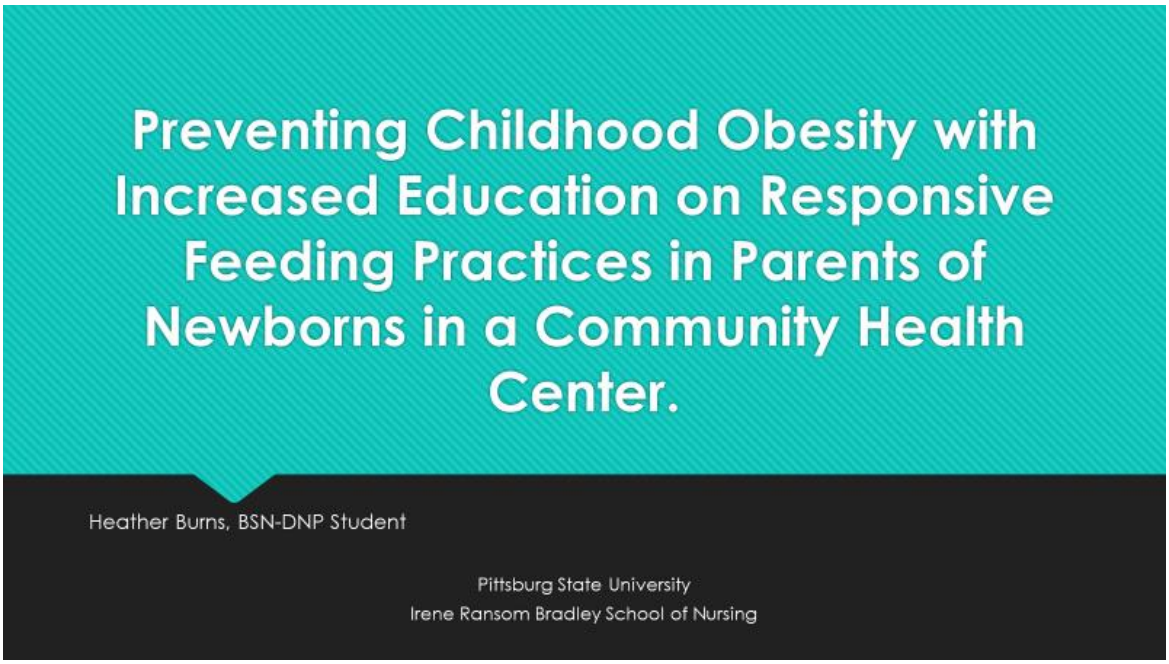
3. How likely are you to continue to incorporate the responsive feeding education into your routine practice after the intervention?

0% of the time	25% of the time	50% of the time	75% of the time	100% of the time

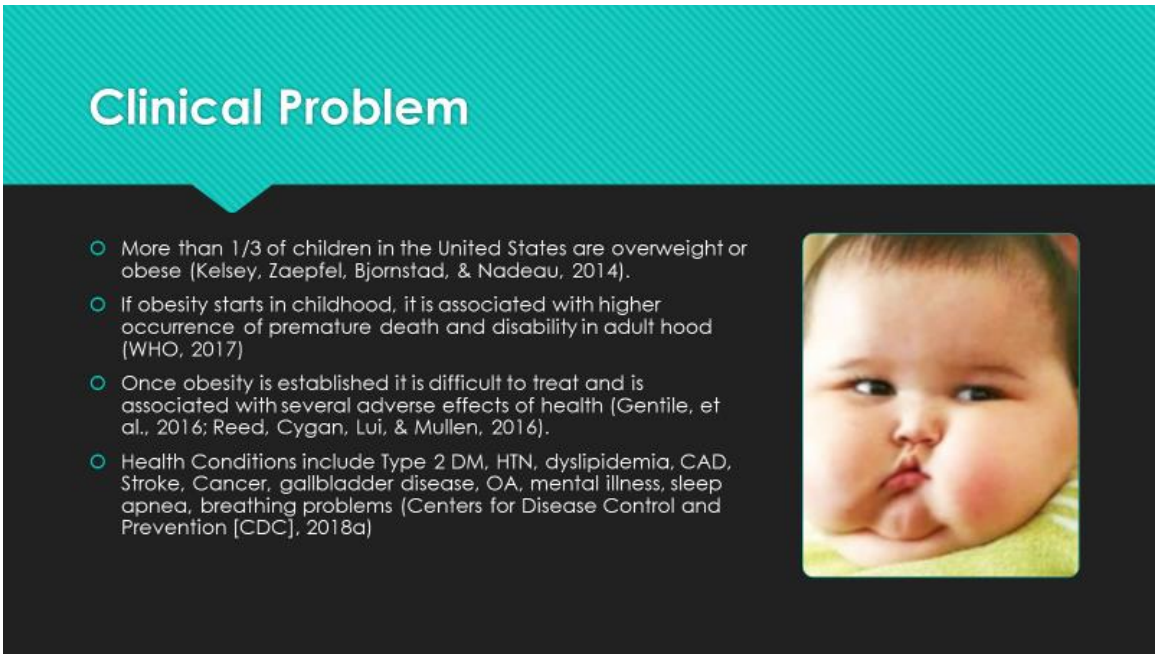
4. What additional information would you like to have seen provided in the teaching intervention?
   Briefly explain:

Appendix F:
Provider Educational Offering PowerPoint Presentation

Slide 1:



Slide 2



Slide 3

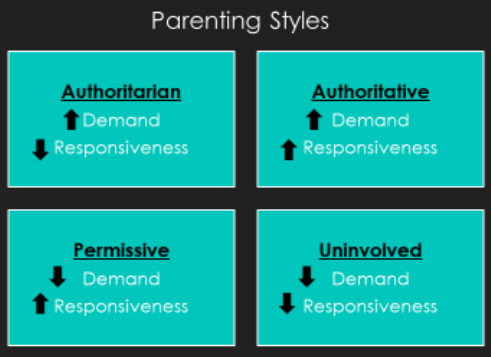
Purpose of the Project

- To inform healthcare providers of current infant feeding guidelines on responsive feeding practices.
- For healthcare providers to increase the education and use of responsive feeding practices in parents of newborns.

Slide 4

Review of the Literature

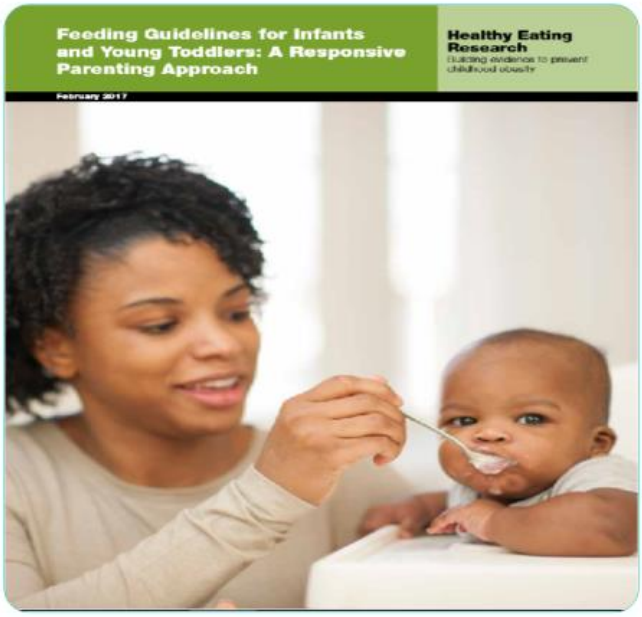
- Parental feeding practices are a well established modifiable risk factor for childhood obesity.
- Multiple influences on feeding practices: parenting style, child temperament, ethnicity and culture, parental perception of childhood obesity.
- Feeding practices used influence the child's weight. Restrictive feeding practices diminish the development of a child to learn to self regulate intake, a crucial element of weight control.
- Very few interventions.



Slide 5

Review of the Literature

- Guidelines reviewed for implementation bundle.
- Robert Wood Johnson Foundation, February 2017, p. 41-42.

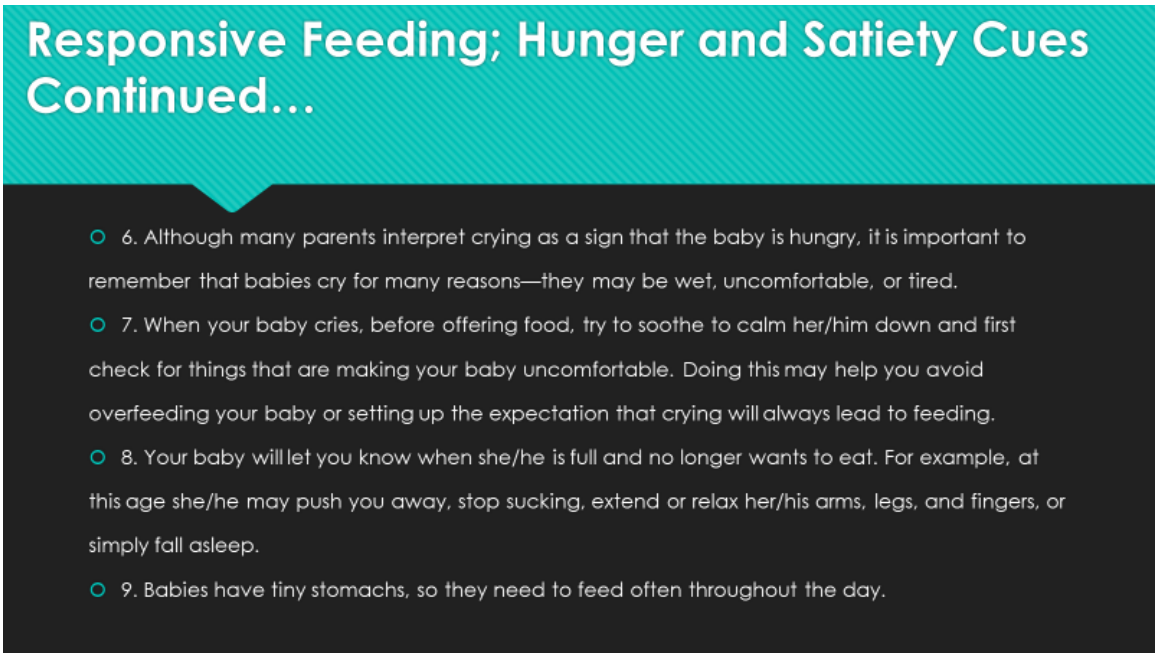


Slide 6

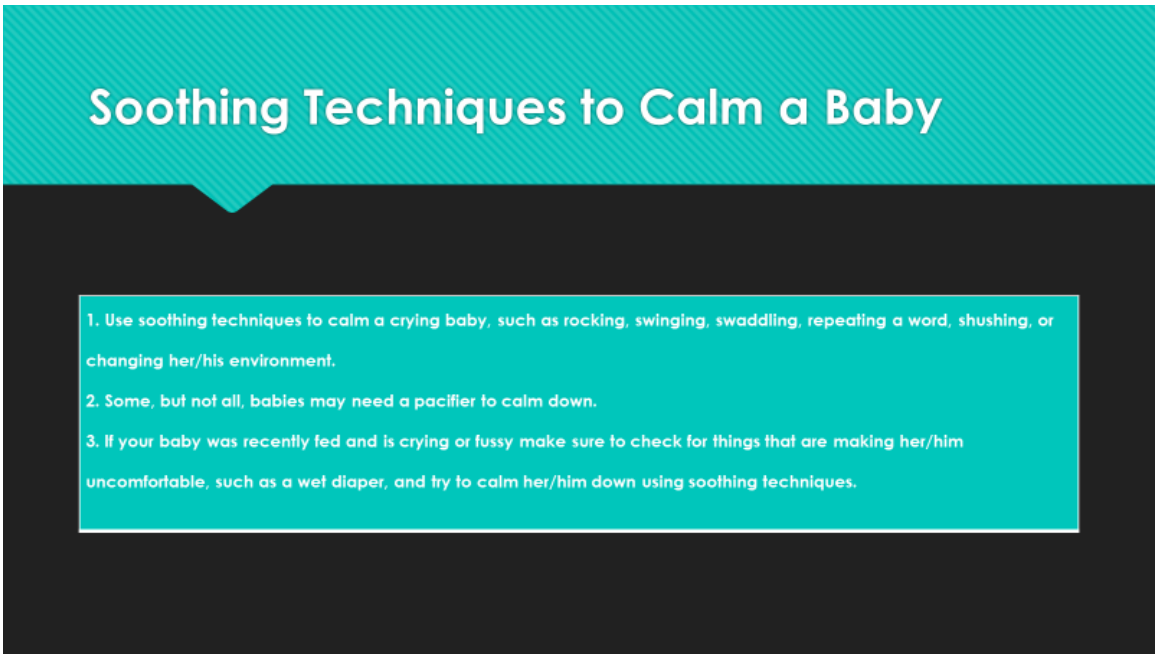
Responsive Feeding; Hunger and Satiety Cues

- 1. Responsive feeding involves recognizing and understanding your baby's hunger and satiety cues and associated behaviors and responding accordingly through a warm and nurturing relationship.
- 2. Babies are born with a natural ability that helps control their appetite. It's important for you to learn how to interpret and respond accordingly to your baby's hunger and fullness signals. Being able to do that takes some learning.
- 3. Misinterpreting your baby's hunger and fullness signs can reduce your baby's ability to self-control her/his appetite and lead to overeating as she/he grows up.
- 4.Help your baby learn to eat only in response to hunger and stop when full, so that she/he doesn't learn to eat for reasons other than hunger.
- 5. Crying by itself cannot be interpreted as a sign of hunger. Additional cues that may indicate that your baby is hungry at this age are: bringing hands to mouth, rooting reflex (ability that babies are born with to help with breastfeeding; it involves turning their heads toward anything that strokes their cheek or mouth), sucking noises, fast breathing, clenching fingers, flexing arms and legs.

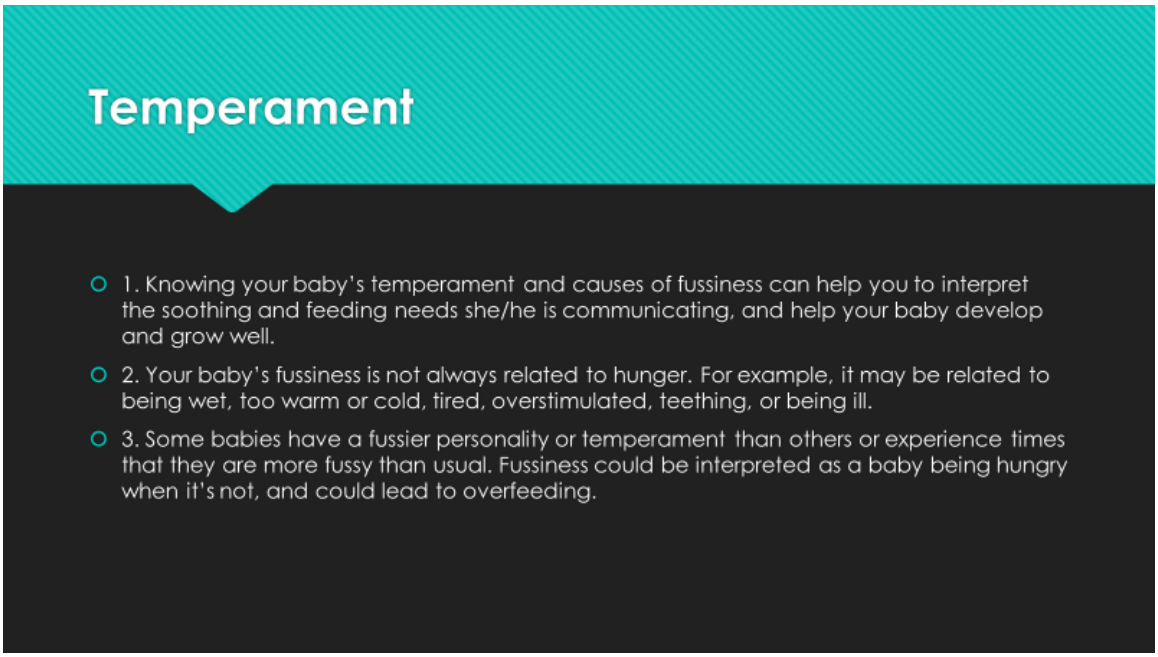
Slide 7



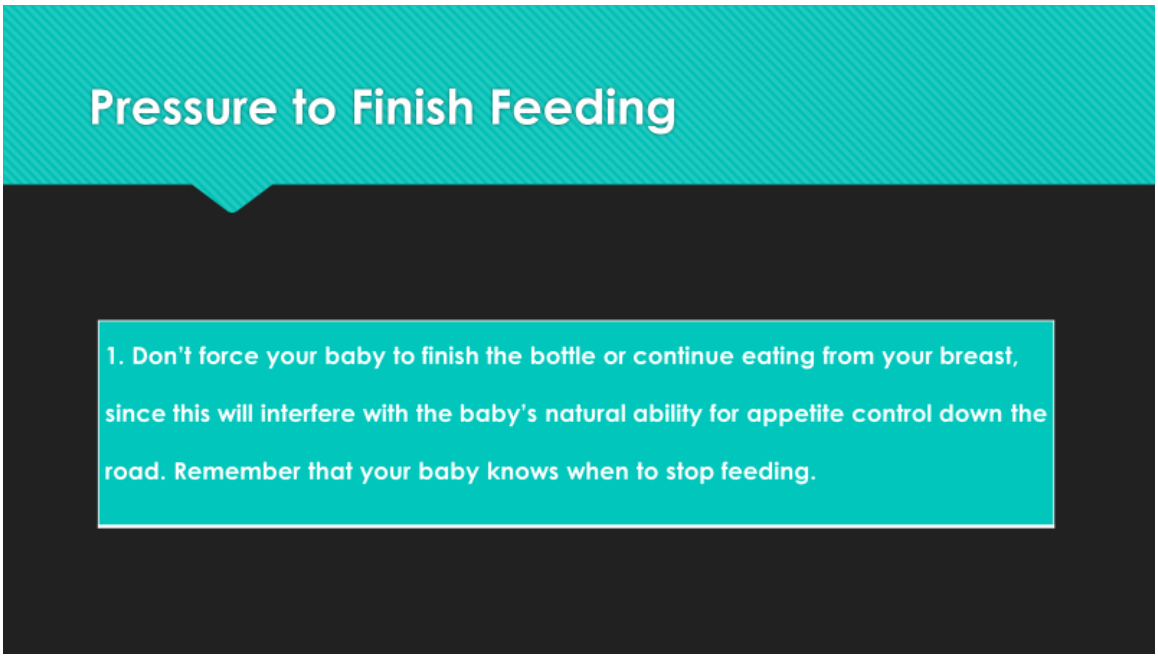
Slide 8



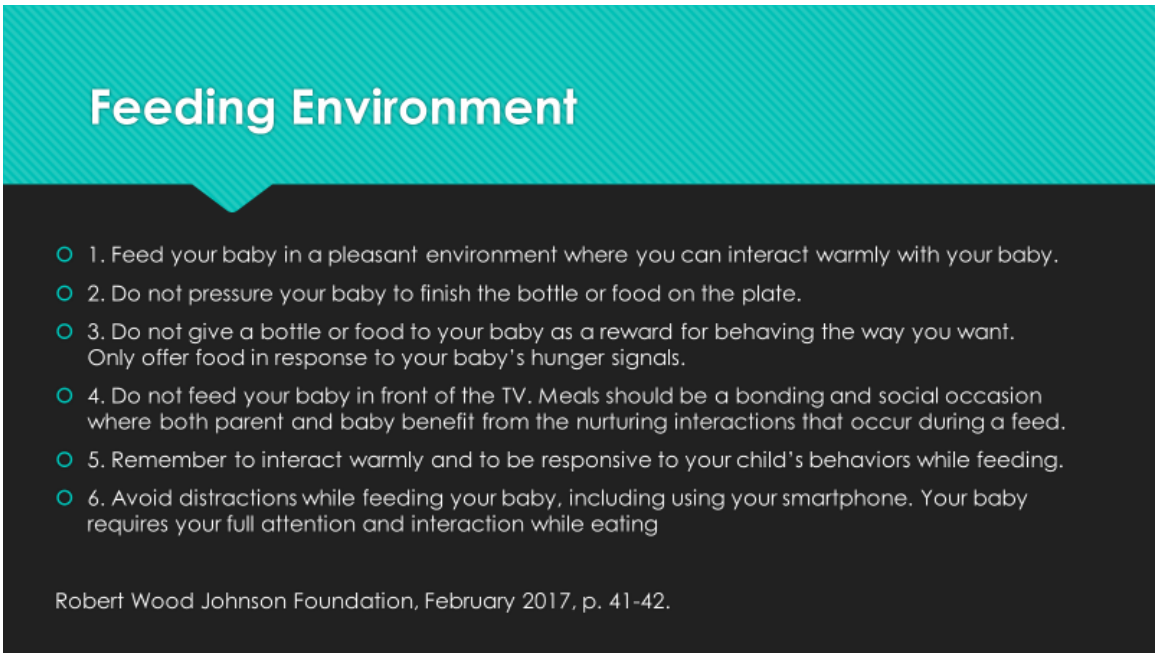
Slide 9



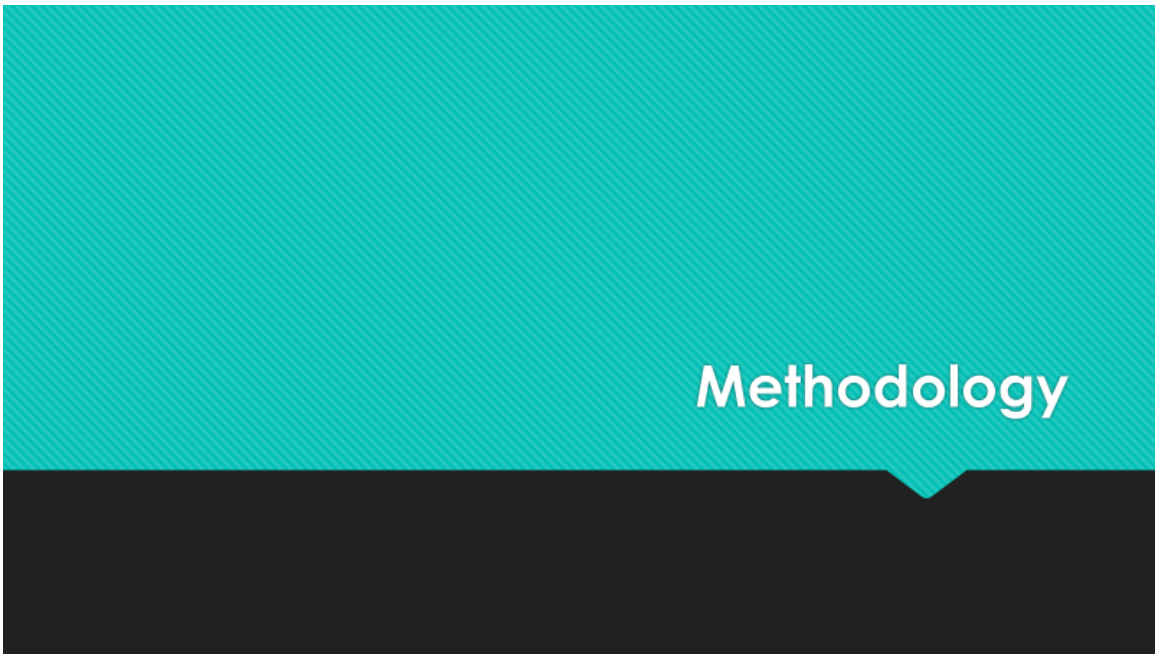
Slide 10



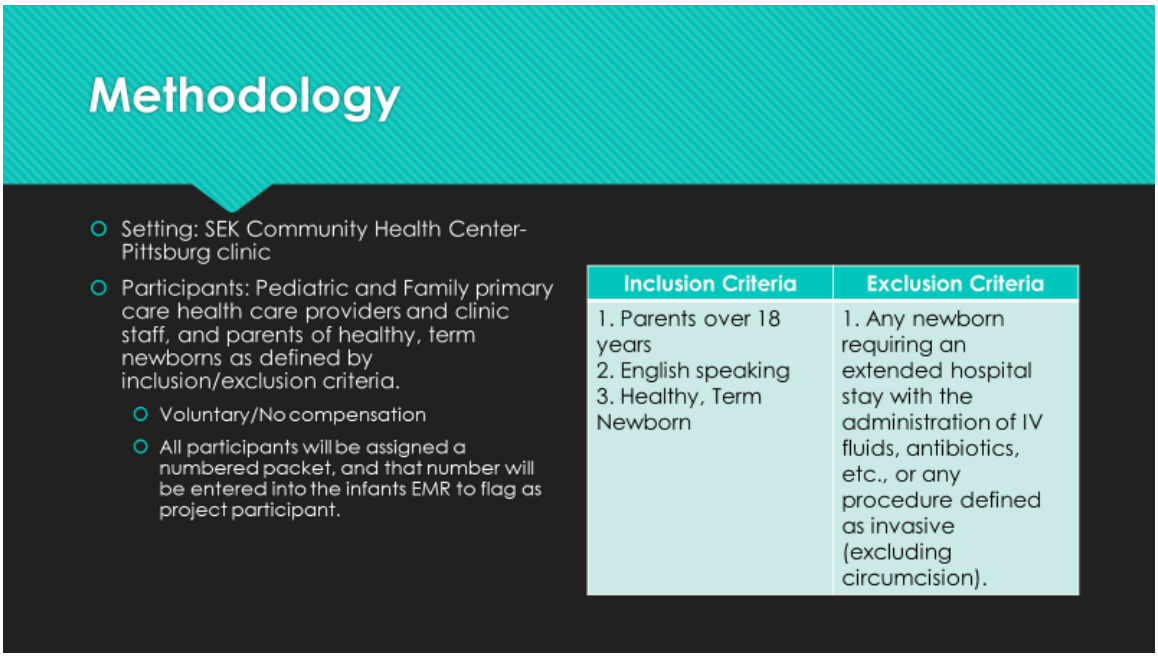
Slide 11



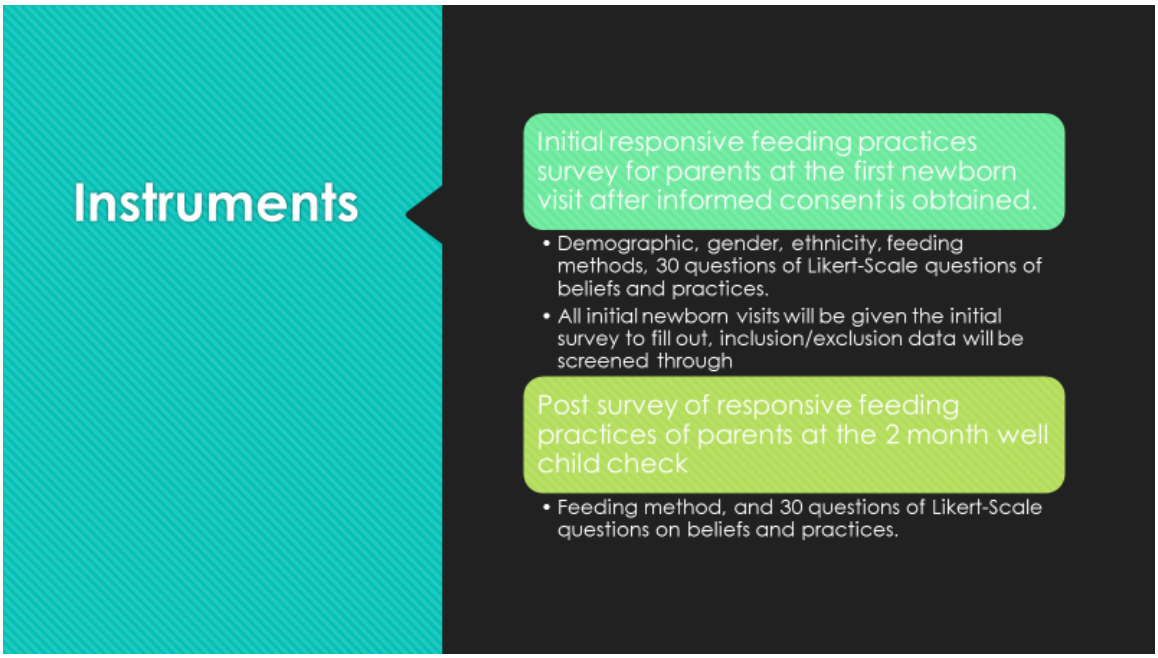
Slide 12



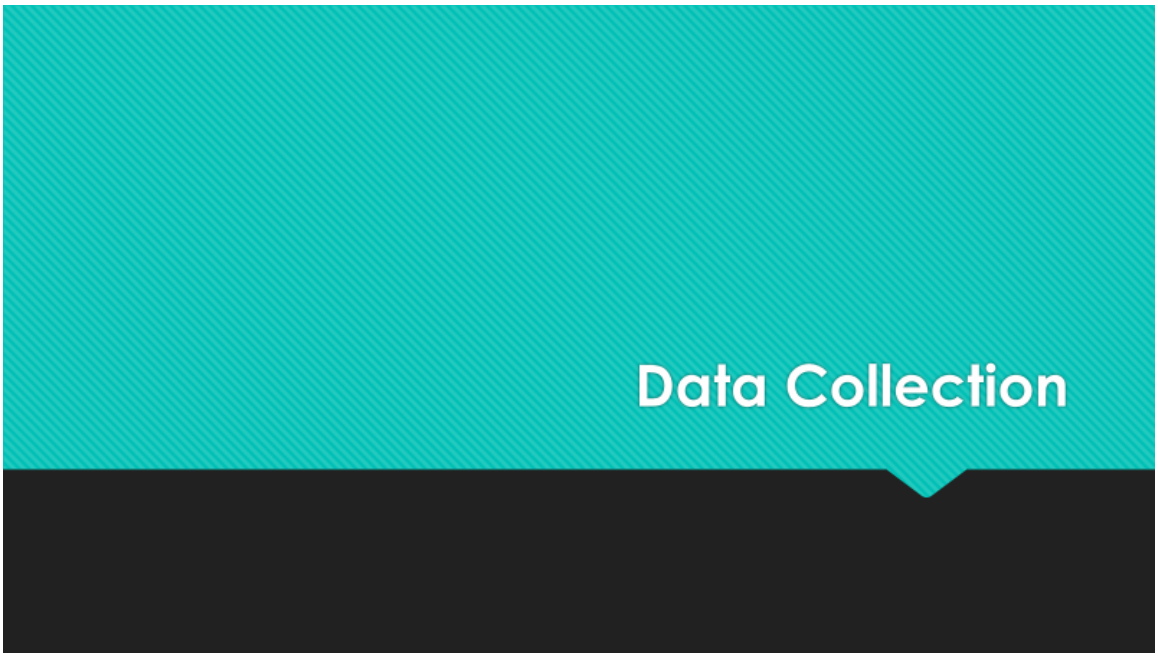
Slide 13



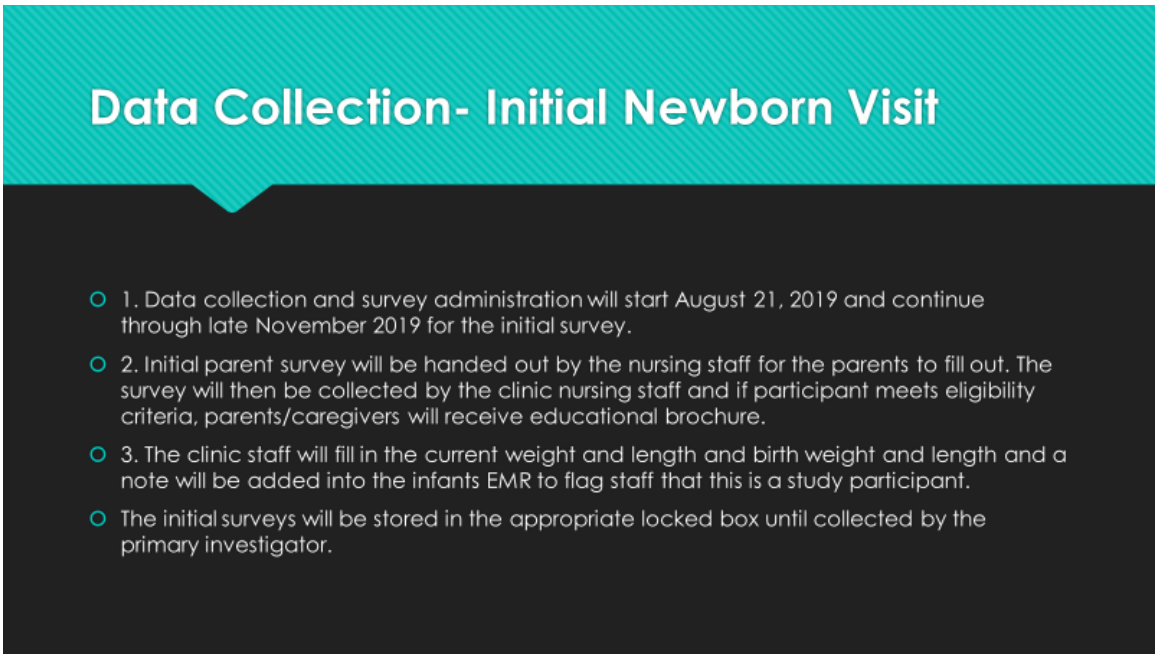
Slide 14



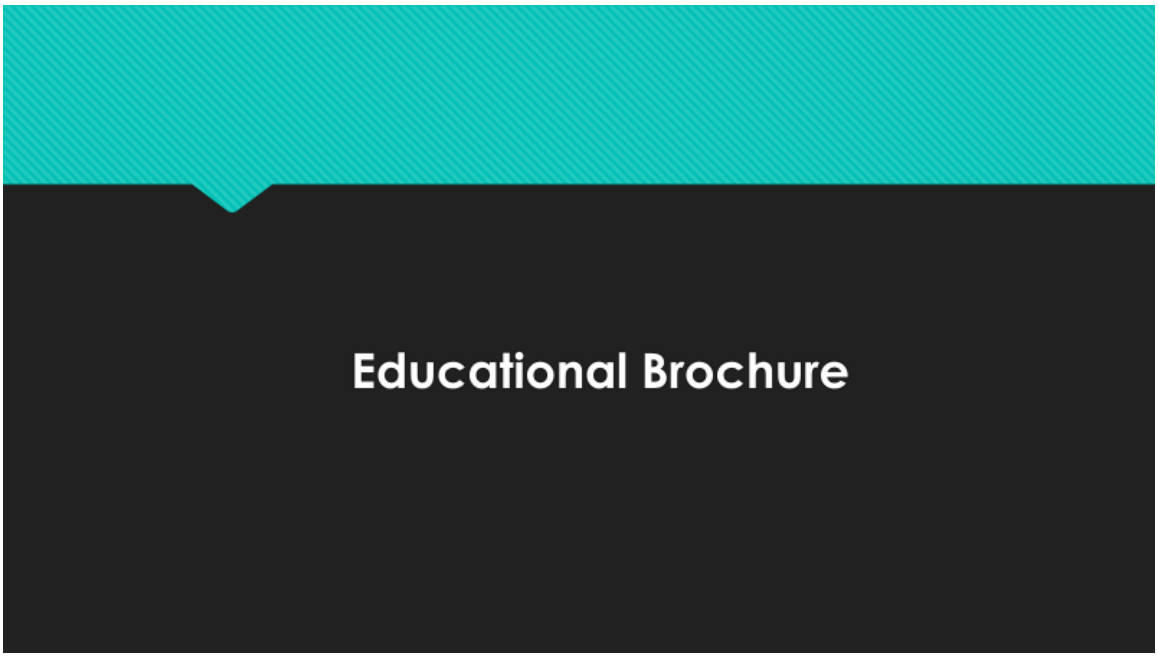
Slide 15



Slide 16



Slide 17



Slide 18

Slide 19

Slide 20

Slide 21


Summary
Childhood obesity in a significant problem in the United States.
Dietary guidelines were released in 2017 for infants and toddlers that encompass responsive feeding practices for healthy eating behavior development.
Non-responsive feeding practices may inhibit the development of self-regulation in young children, when this development is critical to influence, and may not be reversible as the child grows older.
Healthcare providers have a responsibility to ensure that parents are educated on up to date evidence-based feeding guidelines for infants.
This study will use data to determine the effectiveness of a teaching intervention supported by current guidelines for children 0-6 months to increase the education and use of responsive feeding practices in parents of newborns and infants.

Slide 22


References

Slide 23

Afonso, L., Lopes, C., Severo, M., Santos, S., Real, H., Durao, C., Moreira, P., & Oliveira, A. (2016). Bidirectional association between parental child-feeding practices and body mass index at 4 and 7 y of age. *American Journal of Clinical Nutrition*, 103(3), 861-867. doi: 10.3945/ajcn.115.120824

AGREE Next Steps Cosortium. (2009). The AGREE II Instrument [Electronic version]. Retrieved from http://www.agreetrust.org/

Alligood, M. (2014). *Nursing theorist and their work* (8th ed.). St. Louis, MO: Elsevier

American Heart Association. (2016). Reducing sugar-sweetened beverage consumption: A focus on sugar-sweetened beverage taxes. Retrieved from http://www.heart.org/idc/groups/ahaecc-public/@wcm/@global/documents/downloadable/ucm_490766.pdf

Anderson, J., Hayes, D., & Chock, L. (2014). Characteristics of overweight and obesity at age two and the association with breastfeeding in Hawai' women, infants, and children (WIC) participants. *Maternal Child and Health Journal, 18*(10), 2323-2331. doi: 10.1007/s10995-013-1392-9.

Appleton, J., Laws, R., Russell, C., Fowler, C., Campbell, K., & Denney-Wilson, E. (2018). Infant formula feeding practices and the role of advice and support: An exploratory qualitative study. *BMC Pediatrics, 18*, 1-12. doi: 10.1186/s12887-017-0977-7

Bauer, K., Haines, J., Miller, A., Rosenblum, K., Appulgliese, D., Lumeng, J., & Kaciroti, N. (2017). Maternal restrictive feeding and eating in the absence of hunger among toddlers: A cohort study. *International Journal of Behavioral Nutrition and Physical Activity, 14*, 1-10. doi: 10.1186/s12966-017-0630-8

Blaine, R. E., Davison, K. K., Hesketh, K., Taveras, E. M., Gillman, M. W., & Benjamin Neelon, S..E. (2015). Child care provider adherence to infant and toddler feeding recommendations: Findings from the baby nutrition and physical activity self-assessment for child care (baby NAP SACC) study. *Childhood Obesity, 11*(3), 304-313. doi: http://library.pitstate.edu:2143/10.1089/chi.2014.0099

Blissett, J., & Bennett, C. (2013). Cultural differences in parental feeding practices and children's eating behaviours and their relationships with child BMI: A comparison of Black Afro-Caribbean, White British and White German samples. *European Journal of Clinical Nutrition, 67*, 180-184. doi:10.1038/ejcn.2012.198

Boles, R., Reiter-Purtill, J., & Zeller, M. (2013). Persistently obese youth: Interactions between parenting styles and feeding practices with child temperament. Clinical Pediatrics, 52, 1098-1106. doi:10.1177/0009922813497091

Boucher, N. (2014). Feeding styles and the body weight status of preschool-aged children. The Journal for Nurse Practitioners, 10(4), 234-239. doi: http://dx.doi.org/10.1016/j.nurpra.2014.01.018

Branch, J., Appugliese, D., Rosenblum, K., Miller, A., Lumeng, J., & Bauer, K. (2017). Feeding and mealtime correlates of maternal concern about children's weight. Journal of Nutrition Education and Behavior, 49, 490-496. doi:10.1016/j.jneb.2017.03.011

Braun, J., Kalkwarf, H., Papandonatos, G., Chen, A. & Lanphear, B. (2018). Patterns of early life body mass index and childhood overweight and obesity status at eight years of age. *BMC Pediatrics, 18*, 1-8. https://doi.org/10.1186/s12887-018-1124-9

Slide 24

Braun, J., Kalkwarf, H., Papandonatos, G., Chen, A. & Lanphear, B. (2018). Patterns of early life body mass index and childhood overweight and obesity status at eight years of age. *BMC Pediatrics, 18*, 1-8. https://doi.org/10.1186/s12887-018-1124-9

Brewis, S. SturtzSreetharan, C., & Wutich, A. (2018). Obesity stigma as a globalizing health challenge. *Globalization and Health, 14*, 20. http://doi.org/10.1186/s12992-018-0337-x

Brotman, L.M., Dawson-McClure, S., Huang, K., Theise, R., Kamboukos, D., Wang, J., Petkova, E., & Ogedegbe, G. (2012). Early Childhood Family Intervention and Long-term Obesity Prevention Among High-risk Minority Youth. *Journal of Pediatrics, 129*(3): e621-e628. doi:10.1542/peds.2011-1568

Center for Disease Control and Prevention. (2010). WHO growth standards are recommended for use in the U.S. for infants and children 0 to 2 years of age. Retrieved from https://www.cdc.gov/growthcharts/who_charts.htm#The%20WHO%20Growth%20Charts

Center for Disease Control and Prevention. (2014). Breastfeeding report card: United States/2014. Retrieved from https://www.cdc.gov/breastfeeding/pdf/2014breastfeedingreportcard.pdf

Center for Disease Control and Prevention. (2016). Overweight & Obesity. Retrieved from https://www.cdc.gov/obesity/childhood/defining.html

Centers for Disease Control and Prevention. (2017). Childhood Obesity Facts. Retrieved from https://www.cdc.gov/healthyschools/obesity/facts.htm

Center for Disease Control and Prevention. (2018a). Adult obesity causes & consequences. Retrieved from https://www.cdc.gov/obesity/adult/causes.html2410-2414. doi:10.1017/S1368980016000446

Langer, S., Seburg, E., JaKa, M., Sherwood, N., & Levy, R. (2017). Predicting dietary intake among children classified as overweight or at risk of overweight: Independent and interactive effects of parenting practices and styles. Appetite, 110, 72-79. doi:10.1016/j.appet.2016.12.011

Lora, K., Hubbs-Taint, L., Ferris, A., & Wakefield, D. (2016). African-American and Hispanic Children's beverage intake: Differences in association with desire to drink, fathers' feeding practices, and weight concerns. Appetite, 107, 558-567. doi:10.1016/j.appet.2016.09.012

Loth, K.A., Friend, S., Horning, M.L., Neumark-Sztainer, D., & Fulkerson, J.A. (2016). Directive and non-directive food-related parenting practices: Associations between an expanded conceptualization of food-related parenting practices and child dietary intake and weight outcomes. Appetite, 107, 188-195. doi:10.1016/j.appet.2016.07.036

Ma, J., Zhou, L., Hu, Y., Liu, S., & Sheng, X. (2015). Associations between feeding practices and weight status in young children. BMC Pediatrics, 15, 1-10. doi: 10.1186/s12887-015-0418-4

Slide 25

Machuca, H., Arevalo, S., Hackley, B., Applebaum, J., Mishkin, A., Moonseog, H., & Shapiro, A. (2016). Well baby group care: Evaluation of a promising intervention for primary obesity prevention in toddlers. Journal of Childhood Obesity, 12, 171-178. doi: 10.1089/chi.2015.0212

Melnyk, B. M., & Fineout-Overholt, E. (2015). Evidence-based practice in nursing & healthcare: A guide to best practice (3rd ed.). Philadelphia: Wolters Kluwer Health.

Nader, P., Huang, T., Gahagan, S., Kumanyika, S., Hammond, R., & Christoffel, K. (2012). Next steps in obesity prevention: Altering early life systems to support health parents, infants, and toddlers. Childhood Obesity, 8(3), 195-204. doi:10.1089/chi2012.0004

Oddy, W., Mori, T., Huang, R., Marsh, J., Pennell, C., Chivers, P., ...Beilin, L. (2014). Early infant feeding and adiposity risk: From infancy to adulthood. Annals of Nutrition & Metabolism, 62, 262-279. DOI: 10.1159/000365031

Ogden, C. L., Carroll, M. D., Kit, B. K., & Flegal, K. M. (2014). Prevalence of childhood and adult obesity in the United States, 2011–2012. JAMA, 311(8), 806–814. http://doi.org/10.1001/jama.2014.732

Penny, M., Jemenez, M., & Marin, M. (2016). Early rapid weight gain and subsequent overweight and obesity in middle childhood in Peru. BioMed Central, 3, 1-8. DOI 10.1186/s40608-016-0135-z

Power, T., Hughes, S., Goodell, L., Johnson, S., Duran, A., Williams, K., ... Frankel, L. (2015). Feeding practices of low-income mothers: How do they compare to current recommendations? International Journal of Behavioral Nutrition and Physical Activity, 12, 1-11. doi: 10.1186/s12966-015-0179-3

Presidential Commission for the Study of Bioethical Issues. (2016). Vulnerable populations in safeguarding children: Pediatric medical countermeasure research. Retrieved from https://bioethicsarchive.georgetown.edu/pcsbi/sites/default/files/6%20Vulnerable%20Populations%20Safeguarding%20Children%209.30.16.pdf

Reed, M., Cygan, H., Lui, K., & Mullen, M. (2015). Identification, prevention, and management of childhood overweight and obesity in a pediatric primary care center. Clinical Pediatrics, 55(9): 860-866. doi: 10.1177/0009922815614350

Robert Wood Johnson Foundation. (2017). Feeding guidelines for infants and young toddlers: A responsive parenting approach. Retrieved from http://healthyeatingresearch.org/wp-content/uploads/2017/02/her_feeding_guidelines_report_021416-1.pdf

Rollins, B., Loken, E., Savage, J., & Birch, L. (2014). Effects of restriction on children's intake differ by child temperament, food reinforcement, and parent's chronic use of restriction. Appetite, 73, 31-39. doi:10.1016/j.appet.2013.10.005

Slide 26

Shankaran, S., Bann, C., Das, A., Lester, B., Bada, H., Bauer, C. R., & Higgins, R. D. (2011). Risk for obesity in adolescence starts in early childhood. Journal of Perinatology, 31(11), 711-716. http://dx.doi.org/10.1038/jp.2011.14

Shloim, N., Edelson, L. R., Martin, N., & Hetherington, M. M. (2015). Parenting styles, feeding styles, feeding practices, and weight status in 4–12 year old children: A systematic review of the literature. Frontiers in Psychology, 6, 1-20. http://doi.org/10.3389/fpsyg.2015.01849

Sosa, E., Mckyer, E., Pruitt, B., Goodson, P., & Castillo, L. (2015). The complexities of childhood obesity: A qualitative study among Mexican American mothers. Journal of Health Disparities Research and Practice, 8(3):28-41
Spence, A.C., Campbell, K.J., Crawford, D.A., McNaughton, S.A., & Hesketh, K.D. (2014). Mediators of improved child diet quality following a health promotion intervention: The Melbourne InFANT program. International Journal of Behavioral Nutrition and Physical Activity, 11, 1-11.

Steinsbekk, S., Belsky, J., & Wichstrom, L. (2016). Parental feeding and child eating: An investigation of reciprocal effects. Child Development, 87, 1538-1549. doi: 10.1111/cdev.12546

Swyden, K., Sisson, S., Morris, A., Lora, K., Weedn, A., Copeland, K., & DeGrace, B. (2017). Association between maternal stress, work status, concern about child weight, and restrictive feeding practices in preschool children. Maternal Child Health Journal, 21, 1349-1357. doi: 10.1007/s10995-016-2239-y

Tate, A., Trotholz, A., Rudasill, K, Neumark-Sztainer, D., & Berge, J. (2016). Does child temperament modify the overweight risk associated with parent feeding behaviors and child eating behaviors?: An exploratory study. Appetite, 101, 178-183. doi:10.1016/j.appet.2016.02.026

Thompson, A. (2013). Intergenerational impact of maternal obesity and postnatal feeding practices on pediatric obesity. Nutrition Reviews, 71, S55-S61. doi:10.1111/nure.12054.

United States Preventive Services Task Force. (2015). Final research plan for obesity in children and adolescents: Screening. https://www.uspreventiveservicestaskforce.org/Page/Document/ResearchPlanFinal/obesity-in-children-and-adolescents-screening1

Van Der Horst, K., & Sleddens, E. (2017). Parenting styles, feeding styles and food-related parenting practices in relation to toddlers' eating styles: A cluster-analytic approach. *PLoS ONE 12*, 1-16. doi.org/10.1371/journal. pone.0178149

Von Hippel, P. T., & Nahhas, R. W. (2013). Extending the history of child obesity in the United States: The Fels Longitudinal Study, birth years 1930 to 1993. *Obesity (Silver Spring, Md.)*, *21*(10), 2153–2156. http://doi.org/10.1002/oby.20395

Slide 27

Wehrly, S., Bonilla, C., Perez, M., & Liew, J. (2014). Controlling parental feeding practices and child body composition in ethnically and economically diverse preschool children. *Appetite,73*, 163-171. doi:10.1016/j.appet.2013.11.009

Willik, E., Vrijkotte, T., Altenburg, T., Gademan, M., & Holthe, J. (2015). Exclusively breastfed overweight infants are at the same risk of childhood overweight as formula fed overweight infants. *BMJ, 100*, 932-937. doi:10.1136/archdischild-2015-308386

Wood, C., Skinner, A., Yin, S., Rothman, R., Sanders, L., Delamater, A., & Perrin, E. (2016). Bottle size and weight gain in formula-fed infants. *Pediatrics, 138*, 1-7.

World Health Organization. (2018). Obesity and overweight. Retrieved from http://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight

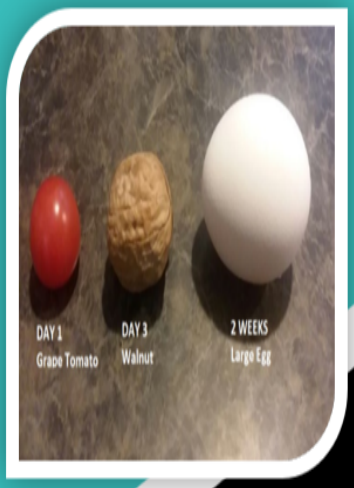
Xu H, Wen LM, Hardy LL, Rissel C. (2016). A 5-year longitudinal analysis of modifiable predictors for outdoor play and screen-time of 2- to 5-yearolds. *International Journal of Behavioral Nutrition and Physical Activity, 13*(1): 1-9

Zhang, J, Himes, J, Guo, Y., Jiang, J., Yang, L., Lu, Q., Ruan, H., & Shi, S. (2013). Birth weight, growth and feeding pattern in early infancy predict overweight/obesity status at two years of age: A birth cohort study of Chinese infants. *Plos One, 8*, 1-8.

Appendix G:
Educational Brochure

HOW BIG IS YOUR NEWBORN'S STOMACH?

Babies have tiny stomachs and will feed often throughout the day. Here is an idea of how big your newborn's stomach is throughout the first two weeks.



REFERENCES

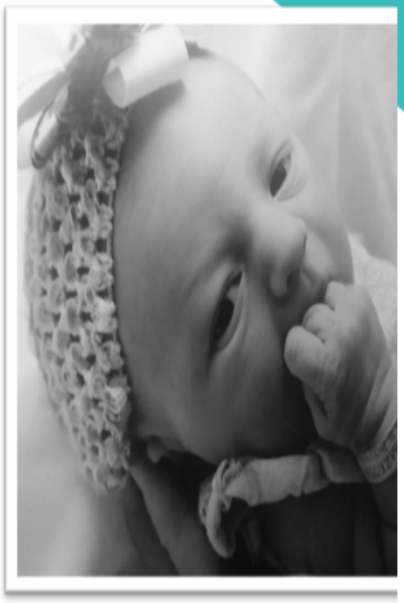
Medela. (2018). The first two weeks of breastfeeding. Retrieved from https://www.medelabreastfeedingus.com/article/238/tips-for-the-first-two-weeks-of-breastfeeding

Robert Wood Johnson Foundation. (2017). Feeding guidelines for infants and young toddlers: A responsive parenting approach. Retrieved from http://healthyeatingresearch.org/wp-content/uploads/2017/02/her_feeding_guidelines_report_021416-1.pdf

Unknown Author. (n.d.). Infant bottle feeding [Digital image]. Retrieved from http://static4.depositphotos.com/1007566/491/i/170/depositphotos_4918055-Baby-milk.jpg

Any questions email responsivefeeding@gmail.com

Please Drink Responsively!



RESPONSIVE FEEDING:

A Healthy Approach to Feeding Your Newborn

CREATING THE RIGHT ENVIRONMENT DURING FEEDING:

Congratulations on the birth of your new baby! Being a parent is an exciting and challenging role. Choosing how to feed your baby is one of the first decisions you make as a parent.

While what you are going to feed your baby, whether breastmilk or formula is an important decision; how you are going to feed your child is an equally important decision.

The first few years of life are critical as your child learns and develops their eating behaviors. While your newborn can not verbalize their feeding needs; as a parent, it is important that you learn to understand your child's communication behaviors, and that these behaviors are met with warm, nurturing responses. This is the goal of responsive feeding! Creating an environment that is nurturing and responsive to your child is a key factor for developing healthy eating habits as your baby grows older. It's important to create and feed your child in a responsive feeding environment that is pleasant and where you and your child can interact warmly, promoting a time to bond and socialize with each other. It is important to avoid distractions during feedings and give your baby your full attention (Turn off the T.V., smartphone, ect.).

YOUR BABY KNOWS WHEN THEY HAVE HAD ENOUGH

It may be hard to consider that there are times that your baby may know best, for example, when he/she has had enough to eat. Letting your child guide when and how much is consumed during a feeding will help your child learn to self-regulate and maintain a healthy weight. Learning to watch and learn your child's signs of hunger and fullness are important to help your child grow up healthy. If you misread your baby's hunger and he/she does not learn to stop eating when full, then he/she may learn to eat for other reasons.

While weight gain in infancy is important, healthy weight gain is even more important. Infants that gain weight too quickly are at a higher risk of becoming obese as they grow older. Here are some ways that you can help your baby learn to eat responsively.

Soothing Techniques:

Try soothing techniques **first** before a feeding, this will help your baby avoid expecting to be fed every time he/she cries.

- Rocking
- Swinging
- Swaddling
- Repeating a word
- Shushing
- Changing the environment

Signs of Hunger:

Babies cry for several reasons: hunger, being wet, uncomfortable, or ill. Crying alone should not be interpreted as a sign of hunger. Crying accompanied by one or more of the following signs is usually indicative of hunger.

- Bring hands to the mouth
- Rooting reflex (baby turns their head in the direction that you stroke one side of their cheek)
- Sucking noises
- Fast breathing
- Clenched fists
- Flexing arms and legs

Feeding Your Baby:

When feeding your baby never prop a bottle! Always hold your baby and he/she will let you know when they are done and no longer want to eat. **Do not** force your baby to finish a bottle or to continue breastfeeding, and never use a bottle as a reward. This will interfere with your baby's appetite control later on. Only offer food as a response to your child's hunger signals.

Signs that your Baby is Full:

- Pushing you away
- Stops sucking
- Extends or relaxes his/her arms, legs, and fingers
- Falling asleep