FACTORS ASSOCIATED WITH CAREGIVER RESPONSIVE AND NON-RESPONSIVE FEEDING STYLES IN CLARK COUNTY, NEVADA

By

Amanda K. Castelo Saragosa

Bachelor of Science- Cellular and Molecular Biology
Chaminade University of Honolulu
2019

A thesis submitted in partial fulfillment
of the requirements for the

Master of Public Health

Social and Behavioral Health
School of Public Health
The Graduate College

University of Nevada, Las Vegas
December 2023

UNLV | GRADUATE COLLEGE

Thesis Approval

The Graduate College
The University of Nevada, Las Vegas

October 30, 2023

This thesis prepared by

Amanda Castelo Saragosa

entitled

Factors Associated with Caregiver Responsive and Non-Responsive Feeding Styles in Clark County, Nevada

is approved in partial fulfillment of the requirements for the degree of

Master of Public Health
Social and Behavioral Health

Gabriela Buccini, Ph.D.
Examination Committee Chair

Alyssa Crittenden, Ph.D.
Vice Provost for Graduate Education & Dean of the Graduate College

Christopher Johansen, Ph.D.
Examination Committee Member

Sheniz Moonie, Ph.D.
Examination Committee Member

Alyssa Crittenden, Ph.D.
Graduate College Faculty Representative

Abstract

Early childhood obesity has increased significantly over the last few decades, reaching epidemic levels in the United States. Many interventions exist to alleviate early childhood obesity; however, little focus is on preventing obesity-related risks for children under two. High-quality child-caregiver interactions are deemed critical for preventing early childhood obesity development, but there is little information on the socio-ecological factors that influence a caregivers' feeding styles. This study examined socio-ecological factors associated with caregivers' feeding styles (responsive vs. non-responsive) for infants under two in Clark County, Nevada. This cross-sectional study utilized a survey targeted to caregivers (18 and older) with infants under two years old living in Clark County, Nevada. Descriptive analysis and a logistic regression following a hierarchical modeling approach were used to determine the associations between household, maternal, and infant characteristics, pregnancy and prenatal care, maternal mental health, infant feeding, and caregiver feeding styles. We found infant and maternal socio-demographic characteristics associated with responsive and non-responsive feeding styles (e.g., mother's age, education, infant's insurance, and weight perception). Additionally, we found that household, maternal mental health, and pregnancy and prenatal care factors were associated with non-responsive feeding styles (e.g., household income, water insecurity, prenatal care, WIC enrollment, depression risk, and anxiety risk). Our study provides insights into socio-ecological factors influencing dissimilarities in caregivers' feeding styles that could be used to tailor educational approaches to address disparities in early childhood obesity.

Acknowledgments

First, I would like to acknowledge and give gratitude to my advisor, Dr. Gabriela Buccini, for whom this work would not have been possible. Her guidance, support, and instruction have carried me throughout all the stages of my research. I would also like to thank my committee members, Dr. Christopher Johansen, Dr. Sheniz Moonie, and Dr. Alyssa Crittenden, for enlightening me with their knowledge and providing suggestions to create a substantial project. I also would like to thank my family and significant other for their continued support throughout my whole academic and professional career thus far. Without them, I would not have the courage and perseverance to progress. This work has been performed under the Health Resources and Services Administration (HRSA) Award Number 1 T52HP46756‑01‑00 awarded to the School of Public Health, University of Nevada, Las Vegas (UNLV), to which I am thankful.

Table of Contents

List of Tables

Chapter 1: Introduction

1.1. Problem Statement: Early Childhood Obesity

Early childhood obesity (ECO) has increased significantly over the last few decades, reaching epidemic levels (Sanyaolu et al., 2019; Morales et al., 2019). According to the Centers for Disease Control and Prevention growth charts, a child is regarded as obese if their body mass index is at the age-and-sex-specific 95th percentile or greater (Sanyaolu et al., 2019; Centers for Disease Control and Prevention, 2019). In the last 40 years, the prevalence of ECO in the United States (U.S.) has more than tripled, with nearly a third of the U.S. children and adolescents being classified as overweight or obese (Anderson et al., 2019; Thompson et al., 2009; Williams et al., 2018; Heller et al., 2019; Kumar et al., 2017). Due to the severe rates of ECO, the Surgeon General of the U.S. has classified ECO as a public health crisis (Anderson et al., 2019).

In addition to its high prevalence, ECO increases the risk of several health problems that can be very detrimental to children. ECO has been shown to cause short and long-term comorbidities, including hypertension, high cholesterol, high blood pressure, prediabetes, type 2 diabetes mellitus, hyperlipidemia, insulin resistance, sleep apnea, cancers, and infertility (Sanyaolu et al., 2019; Morales et al., 2019; Heller et al., 2019; Morandi et al., 2019; Hawley et al., 2006; Shaya et al., 2008). Having obesity during childhood also puts the child at a greater risk of obesity during adulthood (Sanyaolu et al., 2019; Morales et al., 2019; Strauss et al., 2018). Moreover, overweight and obesity are considered forms of early childhood malnutrition, that can coexist with other forms of malnutrition, such as micronutrient deficiencies (Freeman et al., 2020; Perez-Escamilla et al., 2018; Vassilakou, 2021). Overweight or obese children can be affected by the double the burden of malnutrition due to the consumption of ultra processed

poor-quality foods, which could lead to inadequate micronutrient deficiencies (Freeman et al., 2020).

The prevalence of ECO can be caused by numerous factors, including but not limited to ethnic, socioeconomic, and racial factors (Morales et al., 2019; Sanyaolu et al., 2019). For example, the obesity prevalence for children ages 2-19 years in the low-income group was 18.9%, compared to 19.9% for children in the middle-income group and 10.9% in the high-income group (Ogden et al., 2018). However, one factor that has sparked interest in ECO prevention is the caregivers' feeding styles (Heller et al., 2019). Previous research suggests that feeding styles exhibited during infancy may play a role in obesity risk not only in infancy but also during childhood and eventually adulthood (Thompson et al., 2009).

1.2. Caregivers' Feeding Styles

Caregivers' feeding styles influence the way caregivers approach to maintain or modify their child's eating behavior and shape their early feeding environment (Thompson et al., 2009; Harbron et al., 2013). There are two types of feeding styles: responsive (RP) and non-responsive (NRP). An RP feeding style is when a parent monitors the quality of their child's diet and is attentive to the child's hunger and satiety cues (Thompson et al., 2009). An NRP feeding style is the opposite of an RP feeding style. Due to their young age, children's caregivers become the primary influence on their eating behaviors because they are the model for their eating habits, attitudes, and beliefs about food (Heller et al., 2019; Harbron et al., 2013). Hence, understanding how caregivers feed their children (e.g., their feeding styles) may be critical to preventing ECO (Thompson et al., 2009).

1.3. Significance to the field

ECO has been classified as a public health crisis in the U.S. due to its increasing prevalence and the obesity-related health effects it causes in children (Anderson et al., 2019; Heller et al., 2019). Currently, ECO has "low rates of spontaneous or treatment-related resolution(s) and high rates of worsening or relapse after temporary improvements and persistence into adulthood" (Morandi et al., 2020). Obesity that begins in childhood and prolongs through adulthood becomes harder to treat (Sanyaolu et al., 2019). Although there have been many advances in ECO research thus far, there is inadequate evidence about how young children develop obesogenic behaviors, including eating habits and inactivity, especially in low-income families (Williams et al., 2018). Furthermore, previous studies have shown that there are disparities in ECO, yet there is uncertainty about the underlying mechanisms of the issue (Gross et al., 2014).

Therefore, identifying risk factors for ECO and developing public health prevention strategies to address them is critical to preventing adult obesity, increasing prevalence, and obesity-related health risks (Anderson et al., 2019; Sanyaolu et al., 2019). Additionally, there is significant data on the prevention of ECO for children four years and older but minimal data on obesity prevention for infants under two. Nevertheless, recent studies have exhibited that the time frame crucial for preventing childhood obesity is from conception to age five (Skouteris et al., 2020). Hence, there is also a need to focus on obesity prevention for young infants under the age of two years.

Caregivers' feeding styles have been shown to influence ECO. RP feeding has been said to create healthy eating and growth and reduce child over and undernutrition (Harbron et al., 2013). On the other hand, NRP feeding has appeared to create overnutrition or obesity (Harbron

et al., 2013). Therefore, assessing the dissimilarities of caregivers' feeding styles, including beliefs and behaviors, may help to provide information on the causes of ECO (Gross et al., 2014). These dissimilarities include socio-ecological factors influencing a caregivers' feeding styles, including socioeconomic, ethnic, household characteristics, prenatal care, and more (Gross et al., 2014). Thus, assessing factors associated with a caregivers' feeding styles could provide public health professionals with new insights into the prevention mechanisms of ECO (Thompson et al., 2009).

1.4. Objective

The objective of this study was to analyze socio-ecological factors associated with caregiver responsive and non-responsive feeding styles in Clark County, Nevada. The specific objectives of this study are:

(1) To identify socio-demographic, infant, maternal, and feeding factors associated with responsive and non-responsive feeding styles.

(2) To examine whether responsive feeding styles are associated with infant feeding outcomes.

Chapter 2: Background and Significance

2.1. The Prevalence of Early Childhood Obesity

ECO is a global epidemic (Morales et al., 2019). Obesity prevalence, in general, has increased dramatically in developed and developing countries, with the rate of ECO shown to have doubled in more than 70 countries since 1980 (Weihrauch-Blüher et al., 2018; Morales et al., 2019). In 2015, the prevalence of ECO worldwide was as high as 5% among children, and overweight and obesity prevalence taken together was 23% (Weihrauch-Blüher et al., 2018). Also, in the last 20 years, the overall prevalence of obesity in children under five has increased from 4.8 % to 6.1% (31 million vs. 42 million) (Morales et al., 2019).

The prevalence of ECO between ages 2 and 19 in the U.S. has become so widespread over the years that it has increased from 5% in 1978 to 18.5% in 2016 (Anderson et al., 2019; Sanyaolu et al., 2019). The prevalence of ECO by age is as follows: 20.6% for children 12-19 years old, 18.4% for children 6-11 years old, and 13.9% for children 2-5 years old (Sanyaolu et al., 2019). Additionally, 29.7% of children ages 2 to 4 in the U.S. were overweight or obese (CDC, 2021). Moreover, one in every ten children under two in the U.S. enrolled in a public assistance program has a high weight for length (Heller et al., 2019). Thus, ECO in the U.S. is prevalent among all ages.

2.2. Short and Long-Term Adverse Effects of Early Childhood Obesity on Health

ECO has become a public health concern due to the numerous health concerns and complications it can cause for children. ECO can affect a child's physical, psychological, and cardiovascular health (Sanyaolu et al., 2019; Heller et al., 2019; Morandi et al., 2020). It can cause short-term and long-term comorbidities, including hypertension, high cholesterol, high blood pressure, prediabetes, type 2 diabetes mellitus, hyperlipidemia, insulin resistance, sleep

apnea, and infertility (Sanyaolu et al., 2019; Morales et al., 2019; Heller et al., 2019; Morandi et al., 2019). Children also face a higher risk of numerous forms of cancer due to increased body fat (Sanyaolu et al., 2019). These cancers include colon, kidney, breast, esophageal, and pancreatic cancers (Sanyaolu et al., 2019). Other ECO consequences include neurological, metabolic, hepatic, pulmonary, menstrual, and orthopedic disorders (Sanyaolu et al., 2019).

Childhood malnutrition (including undernutrition micronutrient deficiencies, as well as overweight and obesity) is one of the biggest threats to public health and has its own set of adverse effects on health (Vassilakou, 2021) and increased healthcare costs (Perez-Escamilla et al., 2018; Vassilakou, 2021). Children who are obese also may have the double burden of being malnourished. Malnutrition is caused by an insufficient supply of one or more nutrients, which could lead to physical and mental impairment, body composition changes, and adverse effects for underlying diseases (Kobylinska et al., 2021). Worldwide, in 2019, 340 million children under 5 suffered from micronutrient deficiencies, and 38.2 million of those children were overweight or obese (Vassilakou, 2021). Obese children may also experience malnutrition because of the consumption of poor-quality foods due to limited access to food of adequate nutritional quality (Kobylinska et al., 2021; Vassilakou, 2021).

Not only is ECO harmful to children's health, but it is also associated with increased medical costs, morbidity, mortality, and premature death (Anderson et al., 2019; Morandi et al., 2019). It also correlates to poor self-esteem, depression, social and emotional well-being, academic performance, and lower quality of life (Sanyaolu et al., 2019). Additionally, children were more likely to have obesity during adulthood if they had it during childhood (Sanyaolu et al., 2019; Morales et al., 2019). Children with obesity also had an increased risk of early

mortality and a higher likelihood of suffering from cardiovascular and digestive diseases in adulthood (Sanyaolu et al., 2019; Morales et al., 2019).

2.3. Etiology of Early Childhood Obesity

ECO is influenced by numerous components, which makes its etiology very broad. The increase in ECO is not due to one single factor but can be caused by multiple factors. Studies have found many factors associated with the rise in ECO, like sedentary behavior and a decrease in energy expenditure (Anderson et al., 2019; Williams et al., 2018). There has been a decrease in the rate of physical activity of children and an increase in time in sedentary activities like playing video games and watching television (Williams et al., 2018). A child's-built environment (i.e., any physical components of the area where a child grows, works, or plays, including roads, parks, sidewalks, transportation, and community) has also been shown to affect their weight (Anderson et al., 2019; Williams et al., 2018; Strauss et al., 2018).

A child's food environment can influence their food choices, leading them to over consume energy-dense foods, which could then cause them to become obese (The President and Fellows of Harvard College, 2020). Many food environments in the US make it challenging to choose low-energy foods because high-energy foods are more accessible (The President and Fellows of Harvard College, 2020). Energy-dense foods are readily available in supermarkets, entertainment centers, schools, businesses, and restaurants (The President and Fellows of Harvard College, 2020). Additionally, children who may be disproportionately affected by their food environments would be low-income children who live in food-insecure households (Anderson et al., 2019; Williams et al., 2018; Pan et al., 2012). Persistent food insecurity- when an individual has limited access to nutritionally adequate and safe foods to live an active and healthy lifestyle (Taher et al., 2022; Ke et al., 2015; de Oliveira et al., 2020) may also play a role

in ECO development. Although this relationship is not fully understood, food insecure children are more likely to consume energy-dense foods because they are low-cost and more accessible (Anderson et al., 2019; Williams et al., 2018; Pan et al., 2012; Metallinos-Katsaras et al., 2012). Thus, studies have found that the rates of obesity are higher among low-income children (Williams et al., 2018; Morales Camacho et al., 2019).

A caregiver's physical and dietary habits have also been shown to influence ECO, where "children as young as 4 or 5 years old may begin internalizing their caregivers' physical activity and dietary habits" (Williams et al., 2018). It has been found that ECO could be explained by the influence of family factors (Williams et al., 2018). Additionally, water insecurity- lack of consistent access to enough water for productivity and survival (Miller et al., 2021) may also contribute to ECO development because decreased access to water could increase the consumption of sugar-sweetened beverages (Reese et al., 2023). Other factors that affect ECO include poor nutritional knowledge, the onset of child health conditions, birth weight, maternal employment, maternal obesity, educational attainment, race and ethnicity, and rules about food consumption and eating times (Anderson et al., 2019; Williams et al., 2018; Morales Camacho et al., 2019).

2.4. Past Prevention Strategies for Early Childhood Obesity

Many public health resources have been utilized to address the issue of ECO, including school policy reform, nutritional assistance programs, and more (Anderson et al., 2019). Previous prevention strategies for ECO focused on primary care interventions, education, and policy reforms. These interventions included modifying physical activity and health programs/classes in schools, providing health and fitness education models, providing dietary and nutritional regiments, and physical activity modification strategies (Shaya et al., 2008;

Hawley et al., 2006). These interventions focus on healthy eating behaviors, regular physical activity, and reduced sedentary behaviors.

However, minimal interventions focus on children under five years of age. Interventions that do exist concentrate on mother and infant diet, behaviors, and physical activity (Volger et al., 2019). These interventions consisted of mother group and individual informational sessions, informational brochures and handouts, phone sessions, and postcards (Volger et al., 2019). The effectiveness of these interventions was mixed, with some significant and some insignificant results (Volger et al., 2019). However, studies on this age group are so limited that it is challenging to underpin whether these intervention strategies are efficacious. Consequently, this presents the need for further research and interventions on young children under five.

Recently, there has been a change in the focus of ECO prevention (Skouteris et al., 2020). Intervention strategies now focus on an "equitable nurturing approach to child development from a life-course perspective" (Skouteris et al., 2020). This is because it was found that mother and child interactions from conception to 5 years are crucial for preventing ECO development (Skouteris et al., 2020). Three elements were identified to reframe prevention strategies, one of which is to highlight the significance of nurturing mutually responsive infant-caregiver interactions (Skouteris et al., 2020). Thus, this study will focus on understanding how socio-ecological contexts influence caregivers' responsive nurturing care (responsive feeding) in infants under the age of two years.

2.5. Caregivers' Feeding Styles and Early Childhood Obesity

Caregivers' attitudes, styles, practices, and behaviors toward feeding their children are characterized as their feeding styles (Thompson et al., 2009; Harbron et al., 2013). Past researchers studying the association between caregiver feeding styles and ECO have defined five

different types of feeding styles. These feeding styles include responsive (RP), non-responsive laissez-faire (NRP-LF), non-responsive pressuring (NRP-PR), non-responsive restrictive (NR-RS), and non-responsive indulgent (NRP-ID) (Thompson et al., 2009). The first one, NRP-LF, is when a caregiver does not have restrictions on their child's diet quantity or quality and barely interacts with their child during feeding (Thompson et al., 2009). NRP-PR feeding style refers to a caregiver that force-feeds their child because they worry about how much their child consumes while also using food as a soother (Thompson et al., 2009). A NRP-RS style is a caregiver that limits the amount and type of food their child consumes (Thompson et al., 2009). A RP style is a caregiver that is "attentive to child hunger and satiety cues and monitors the quality of the child's diet" (Thompson et al., 2009). Lastly, an NRP-ID style is a caregiver that sets no restrictions on the quality and quantity of the child's food (Thompson et al., 2009).

Furthermore, the different types of feeding can be broken down into two separate domains: responsive (RP) and non-responsive (NRP) feeding. RP feeding is an element of active feeding, where the "parent or caregiver engages in positive behavior with the child while encouraging and bearing in mind the interests of the child during mealtimes" (Harbron et al., 2013). This feeding style has been shown to "encourage self-regulation in eating and support cognitive, emotional, and social development in young children" (Heller et al., 2019; Pérez-Escamilla et al., 2019). In contrast, NRP is the opposite of responsive feeding, where parents engage in negative feeding behaviors with their children (Harbron et al., 2013). The remaining four feeding styles mentioned before are considered NRP feeding types. These styles include NRP-LF, NRP-PR, NRP-RS, and NRP-ID. NRP feeding styles portray negative feeding styles, which "includes aversive and intrusive attempts at direct feeding, i.e., force-feeding, holding the child's head, and threatening or shaking the child" (Harbron et al., 2013). RP feeding

has been identified as a necessary factor in preventing malnutrition, including ECO (Heller et al., 2019; Pérez-Escamilla et al., 2019). Alternatively, NRP feeding, such as NRP-RS and NRP-PR feeding styles, has been associated with an increased Body Mass Index in children (Redsell et al., 2021). This is because the NRP feeding practices of control, restriction, and pressuring can impede children's hunger and satiety cues (Holley et al., 2021).

Psychological, environmental, and social factors have been found to influence caregiver feeding styles (Redsell et al., 2021). Other factors that are assumed to impact feeding styles are socioeconomic status, perceptions, the environment, ethnicity, birth weight, and time (Harbron et al., 2013; Redsell et al., 2021). For example, caregivers with time constraints may exhibit controlling feeding styles, causing frustration and negligence of their child's satiety cues during feeding times (Harbron et al., 2013). Moreover, it has been found that mothers of low birth weight infants presented indications of NRP-ID feeding, compared to the mothers of higher birth weight infants, who displayed signs of NRP-RS feeding (Harbron et al., 2013). Caregivers with restricted diets have also exhibited NRP-RS feeding towards their children (Harbron et al., 2013). A caregiver's knowledge and understanding of nutrition, appetite, feeding, and children's feeding cues were also associated with their feeding style (Redsell et al., 2021).

Although very limited, previous studies have shown a connection between caregivers' feeding styles and ECO. NRP feeding is potentially associated with obesogenic eating patterns because it is a more controlling and NRP-RS feeding style (Thompson et al., 2009). It has been associated with overnutrition and higher child weight through the effects of inappropriate eating (Thompson et al., 2009; Harbron et al., 2013). On the contrary, RP feeding appears to foster healthy eating and growth and reduce child over and undernutrition (Harbron et al., 2013). Prior ECO prevention strategies have found that giving RP feeding guidance to mothers has improved

feeding and weight status among their children (Pérez-Escamilla et al., 2019; Redsell et al., 2021). Regardless of the association between caregiver feeding styles and ECO, there are inconsistencies in our overall understanding because there is an absence of a comprehensive empirical and theoretical underpinning to RP feeding interventions (Morandi et al., 2020). Therefore, understanding RP and NRP feeding styles and the socio-ecological factors influencing them could help reduce the current ECO epidemic.

2.6. Gaps in Knowledge

Many studies and instruments have been used to examine child feeding practices, but only a few looked at infant feeding practices (Thompson et al., 2009). Furthermore, these studies examining the association between feeding styles and overweight have focused primarily on preschool and school-aged children ages two and older (Thompson et al., 2009; Pérez-Escamilla et al., 2020). Therefore, there are limited studies on feeding styles' effects on infants under the age of two years. Most of these studies were also conducted on high-income Caucasian children and their caregivers (Thompson et al., 2009; Pérez-Escamilla et al., 2020). As a result, there is insufficient knowledge about infant feeding and ECO in lower-income and more diverse populations. Lastly, no concrete information exists on the factors influencing caregivers' RP and NRP feeding styles.

This study included any mother/caregiver and infant from all different income levels, including middle and low incomes. In addition, the study looked at various socio-demographic factors influencing a caregivers' feeding styles, including household characteristics, maternal socio-demographics, pregnancy and prenatal care, maternal mental health, infant characteristics and background, and infant feeding. Lastly, the study focused on mothers/caregivers of infants under two years old.

Chapter 3: Methods

3.1. Research Question

What are the factors associated with caregivers' responsive and non-responsive feeding styles?

3.2. Hypothesis

This study hypothesized that socio-ecological factors such as socio-demographic, infant, and maternal characteristics are associated with caregivers' responsive and non-responsive feeding styles.

3.3. Study Design

This cross-sectional study utilized a survey to examine the socio-ecological characteristics of mother-infant dyads and early childhood outcomes. Specifically, this study analyzed the influence of different socio-demographic, infant, and maternal characteristics have on caregivers' feeding styles (Responsive vs. Non-responsive). The study's protocol was approved by the University of Nevada, Las Vegas's Institutional Review Board (Protocol UNLV-2022-372). Participation in this study was entirely voluntary, and no personal information was collected. Informed consent was obtained at the beginning of each survey, and answers were kept completely anonymous. Participants were not provided with incentives to participate in this survey.

3.4 Study Setting

The study was conducted in Clark County, Nevada. Nevada has 16 counties, and Clark County is the largest by population (Southern Nevada Community Health Assessment Report 2020/2021). According to the Southern Nevada Community Health Assessment Report 2020-2021, Clark County accounts for 73% of Nevada's total population, with an estimated population of 2,922,849 individuals. This population consists of 50% male and 50% female. The

demographic breakdown of Clark County is as follows: 43.5% White/Caucasian, 30.9% Hispanic/Latino, 11% Black/African American, 9.4% Asian/Pacific Islander, 1.7% other race, and 0.5% American Indian/Alaska Native (Southern Nevada Community Health Assessment Report 2020/2021). Additionally, the percentage of individuals living at or below the federal poverty level in Clark County is 14.1%, with American Indian/Alaska Native having the highest percentage of the poverty level (25%), followed by Black/African American (24.7%), Hispanic/Latino (18.5%), White/Caucasian (11.6%), and Asian/Pacific Islander (9.1%).

Several measures of ECO in Nevada demonstrated the need for enhancing effective prevention and intervention strategies. Per the State of Nevada Annual Obesity Report (2020), 11.1% of children entering kindergarten were considered overweight, and 21.3% of those children were considered obese. The percentage of obese kindergarten students in Nevada in 2019-2020 has steadily climbed among marginalized racial/ethnic communities of Color (e.g., 30.6% of African American/Black, 29.9% of Hispanic, and 22.0% of Asian/Pacific Islander). Additionally, 11.6% of participants in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) who were between 2 and 4 years old in Nevada are considered obese (CDC, 2021). These data indicated that efforts to prevent ECO need to begin earlier for children residing in Clark County (Nevada Division of Public and Behavioral Health, 2020). Therefore, documenting and understanding disparities in ECO in Clark County can help to create more effective prevention strategies.

3.5 Sample/Sampling

This study utilized a snowball convenience sample, where key stakeholders of the study setting were identified and asked to share the study with other individuals that they know (Emerson, 2015). This study recruited mothers from Baby-friendly hospitals and birth, pediatric,

lactation, and WIC centers within Clark County. The sample size for this study was determined using live births in Clark County. According to Southern Nevada Health District Vital Records Statistics, there were 25,493 live births in 2021. Using a 95% confidence interval, a 5% margin of error, and assuming there will be a completion of 50%, we determined a sample size of 379 mother/caregiver-infant dyads. G*power version 9.0.1 was used to conduct an *a priori* analysis to determine the minimum sample size required to test the study hypothesis. Results from the power analysis indicated that the minimum required sample size to achieve 80% power with a moderate effect size (cohen's d = 0.5), at a significance criterion $\alpha = .05$, was n=71 for logistic regression. Therefore, our final sample size of n=304 exceeded the minimum requirement for efficiently powered analysis.

Inclusion criteria included any mother or caregiver that was 18 and older and resided in Clark County (including Mesquite, the City of Las Vegas, Henderson, Boulder City, and North Las Vegas). These mothers/caregivers must have had an infant aged 0-23 months. This study excluded any infant with special needs that prevent them from adopting optimal feeding practices, including infants with specific illnesses/needs (Down syndrome, cleft lip or palate, congenital heart disease, neurological conditions, or cardiac problems).

3.6. Data Sources

3.6.1. Survey Development. The 2022 Early Responsive Nurturing Care (EARN) survey was developed in union with my peers and mentor. There are nine sections total: Screening, Maternal Background and socio-demographics, Maternal/Caregiver Well-being, Infant Background, Pregnancy and Prenatal Care, Baby Delivery, Infant and Young Children Feeding and Soothing Practices, Infant feeding styles, and Early Childhood Development. The survey was developed in English but translated to Spanish,

so both versions were available to participants. The survey is a modified version of the 2021 EARN Survey, and includes questions from six validated instruments: (1) the Edinburgh Postnatal Depression Scale, (2) the Generalized Anxiety Disorder Assessment, (3) the Brief Parental Burnout Scale, (4) the Hunger Vital Sign, (5) the Household Water Insecurity Access Form, and (6) the Infant Feeding Style Questionnaire **(Scoring located in Appendix A).**

(1) Edinburgh Postnatal Depression Scale (EPDS): The EPDS is a 10-item self-reported instrument that is used to determine risk for postpartum depression in mothers (Gibson et al., 2009). It was chosen for this survey because it is the more commonly used screening questionnaire for identifying risk for postpartum depression, validated, and is translated into different languages, specifically Spanish (Gibson et al., 2009). The instrument has a mother report how she has felt during the previous seven days (Provincial Health Services Authority, n.d.). Responses are scored 0, 1, 2, and 3 based on the seriousness of the symptoms (Provincial Health Services Authority, n.d.). Scoring is as follows: risk for no or minimal depression (0-6), mild depression (7-13), moderate depression (14-19), and severe depression (19-30) (Provincial Health Services Authority, n.d.).

(2) Generalized Anxiety Disorder Assessment (GAD-7); The GAD-7 is a 7-item self-reported instrument that determines general anxiety disorder risk (Zhong et al., 2015). This instrument was chosen for this survey because it has been proven to be a valid and reliable instrument across many cultures and is available in different languages, including Spanish (Zhong et al., 2015). The survey asks an individual the severity of their symptoms over the last two weeks, from “not at all”, “several days”, “more than half the days” and “nearly every day” (Generalized anxiety disorder assessment, n.d.). Responses

are scored 0, 1, 2, and 3 based on the seriousness of the symptom (Generalized anxiety disorder assessment, n.d.). Scoring is as follows: risk for minimal anxiety (0-4), mild anxiety (5-9), moderate anxiety (10-14), and severe anxiety (15-21).

(3) Brief Parental Burnout Scale (BPBS): The BPBS is a survey used to measure an individual's emotional distress, exhaustion, and feelings from being a parent (Aunola et al., 2021). It was chosen because it is a validated and short, 5-item screening tool based on the Parental Burnout Assessment (Aunola et al., 2021). The parents rate their symptoms from A "daily," B "once or twice a week, or C "more seldom/never" (Aunola et al., 2021). If a parent answers "A" to at least one question or "B" to at least two questions, they are at risk for parental burnout (Aunola et al., 2021).

(4) Hunger Vital Sign™: The Hunger Vital Sign is a validated 2-item screening tool to measure risk for household food insecurity based on the U.S. Household Food Security Survey Model (Hunger Vital Sign™, n.d.). It is a validated tool for children and adults, and was chosen because it is a simple form to identify food insecurity risk (Hunger Vital Sign™, n.d.). Individuals answer the questions from "never true," sometimes true," or "often true" (Hunger Vital Sign™, n.d.). If they answered "sometimes true" or "often true" to either of the questions, they were considered at risk for food insecurity (Hunger Vital Sign™, n.d.).

(5) Household Water Insecurity Access Scale (HWIAS): The HWIAS is an 8-item self-reported questionnaire that measures household water insecurity and was developed based on the household food insecurity access scale (Cooper-Vince et al., 2018). This questionnaire has shown to be a valid and reliable instrument (Cooper-Vince et al., 2018). However, only one question from the instrument was used to be considerate of the length

of the final survey. The question used was “Within the past 12 months, we worried about not having enough money to afford access to clean water (i.e., drinking water, bathing/washing hands, washing clothes, or any other needs) and individuals could answer “never true,” “sometimes true,” or “often true.” If they answered either sometimes or often true, they were classified as at risk for water insecurity.

(6) Infant Feeding Style Questionnaire (IFSQ): The IFSQ is a self-report instrument that measures the feeding beliefs and behaviors of mothers with infants and young children (Thompson et al., 2009). Although the IFSQ includes a substantial number of questions (n=83) **(Appendix B)**, it was chosen for this study for many reasons. This questionnaire is very well organized and separates the questions into categories by different feeding styles (Laissez-faire, pressuring, restrictive, responsive, indulgence). The IFSQ is a valid and reliable instrument for the U.S. population, has been used on infants ages three months- 24 months, and includes all RP feeding measures compared to other valid instruments (Heller et al., 2019).

3.7. Data collection

After the Institutional Review Board (IRB) approval, the survey was disseminated. Data were collected for four months, from November 2022 to March 2023. A flier with a QR code to the survey was distributed at baby-friendly hospitals and birth, pediatric, lactation, and WIC centers within Clark County. Additionally, surveys were dispersed through social media platforms (Facebook and Instagram). Mothers and caregivers of infants answered the close-ended questions based on the sections mentioned above through Qualtrics.

3.8 Measurements

3.8.1. Outcome. The outcome of this study was caregivers' feeding styles collected using the Infant Feeding Style Questionnaire (IFSQ) **(Figure 1)**. To classify whether the participants exhibited the five different feeding styles, we first calculated the overall mean scores of each feeding style. If a participant had a score above a mean for a specific feeding style, they were classified as exhibiting that feeding style. If they had a score below the mean, they were classified as not exhibiting that feeding style. The outcome can be classified into five constructs of feeding styles: (1) responsive, (2) laissez-faire, (3) pressuring, (4) restrictive, and (5) indulgent **(Appendix C)**.

(1) Responsive (RP) feeding style: This outcome consists of a combination of RP behaviors and beliefs. An RP feeding style is when a parent monitors their child's diet quality and is attentive to their hunger and satiety cues (Thompson et al., 2009).

(2) Non-Responsive Laissez-faire (NRP-LF) feeding style: This outcome consists of a combination of NRP behaviors and beliefs. NRP-LF feeding is when a caregiver does not have restrictions on their child's diet quantity or quality and barely interacts with their child during feeding (Thompson et al., 2009).

(3) Non-responsive Pressuring (NRP-PR) feeding style: This outcome consists of a combination of NRP behaviors and beliefs. NRP-PR feeding is when a caregiver essentially force-feeds their child because they are worried about the amount of food their child is consuming while also using food as a soother (Thompson et al., 2009).

(4) Non-Responsive Restrictive (NRP-RS) feeding style: This outcome consists of a combination of NRP behaviors and beliefs. NRP-RS feeding is when a caregiver limits the amount and type of food their child consumes (Thompson et al., 2009).

(5) Non-responsive Indulgent (NRP-ID) feeding style: This outcome consists of a combination of NRP behaviors and beliefs. NRP-ID feeding is when a caregiver sets no restrictions on the quality and quantity of the infant's food (Thompson et al., 2009).

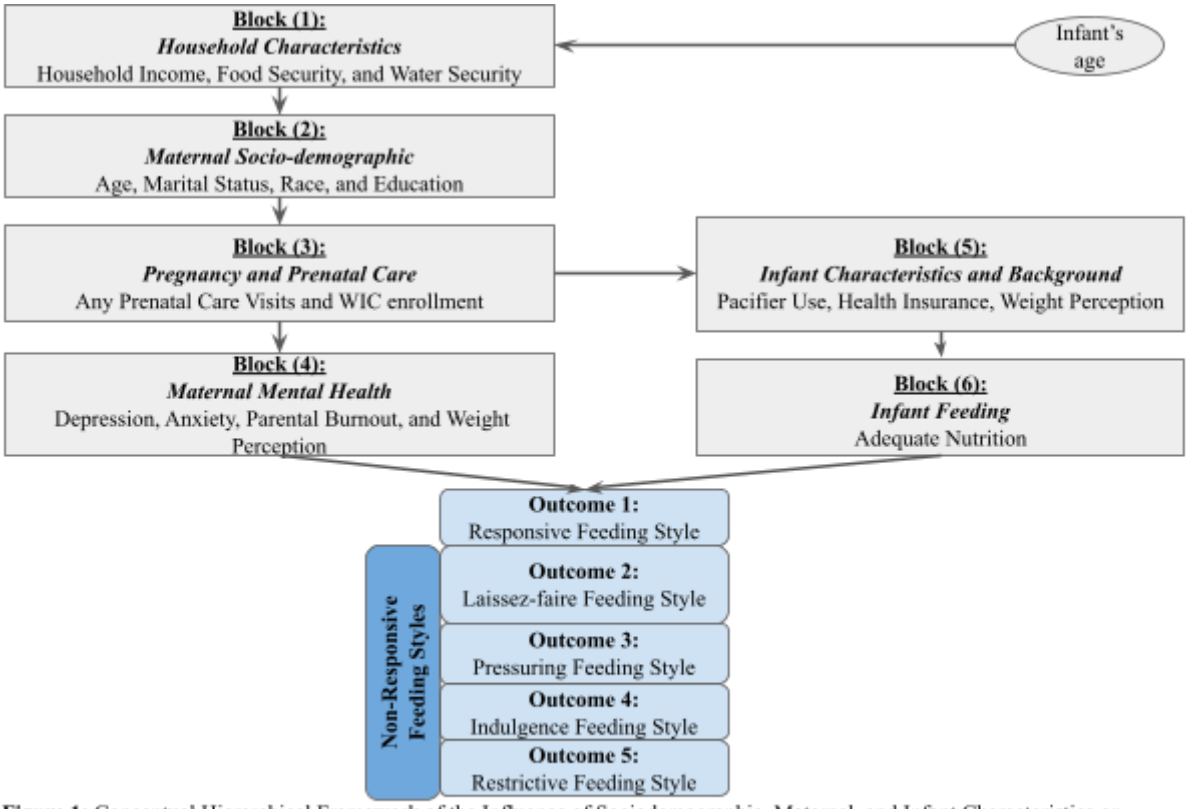

Figure 1: Conceptual Hierarchical Framework of the Influence of Sociodemographic, Maternal, and Infant Characteristics on Caregiver's Feeding Styles

3.8.2. Covariables. The covariables for this study were selected by using the conceptual hierarchical framework and evidence from previous studies that connect the covariables and the outcomes (Harbron et al., 2013; Pérez-Escamilla et al., 2019; Pérez-Escamilla et al., 2020; Holley et al., 2021; Sandow et al., 2020; Hudak et al., 2021). Different

variables were categorized according to their influence on other variables and the outcomes. There were six categories in total: household characteristics, maternal socio-demographics, pregnancy and prenatal care, maternal mental health, infant characteristics and background, and infant feeding **(Figure 1).** Infant age was used as a constant between the five feeding models. Each category included the following variables **(Definitions in Appendix D):**

(1) Household characteristics include household income (low income (less than $49,999) / middle income ($50,000-$149,999)/ upper income (more than $150,000)), food security (food secure/ food insecure), and water security (water secure/ water insecure).

(2) Maternal socio-demographics include age (18-24 / 25-34 / 35-44), marital status (living without a partner (single, widowed, separated)/ living with a partner (married, living together)), Non-Hispanic White (yes/no), and education (secondary level or less/ some college, no degree/ college (associate or bachelor's degree)/ graduate degree).

(3) Pregnancy and prenatal care included prenatal care visits (yes/no) and WIC enrollment (yes/no)

(4) Maternal mental health includes risk for depression (None or minimal depression (0–6)/ Mild depression (7–13)/ Moderate/Severe depression (14–30)), risk or anxiety (Minimal anxiety (0–4)/ Mild anxiety (5–9)/ Moderate/Severe anxiety (10–21)), risk for parental burnout (Burnout Risk/ No Burnout), and weight perception (underweight/ normal weight/ overweight).

(5) Infant characteristics and background include pacifier use (yes/no), health insurance coverage (government/ private/ other/none), and maternal perception of the infant's weight (underweight/ normal weight/ overweight).

(6) Infant feeding includes meeting infant dietary guidelines (exclusive breastfeeding <6 months and complementary feeding > 6 months) (yes/no).

3.9. Data Analysis

The data from the surveys were collected via Qualtrics and exported to STATA SE 17 for analysis. First, descriptive analysis was performed for the outcomes and covariables, including the mean, standard deviation, and frequency distribution. The five IFSQ feeding styles were used as outcomes, and a separate analysis was performed for each. The covariables were household characteristics, maternal socio-demographics, WIC, pregnancy and prenatal care, maternal mental health, infant characteristics and background, and infant feeding. Second, bivariate correlations were performed to determine the associations between the outcome and covariables. Covariables were included in a multivariate model when they had an association with a p-value <0.20 in the bivariate analysis. To identify the associations of responsive, laissez-faire, pressuring, indulgent, and pressuring feeding, a logistic regression following a hierarchical modeling approach with robust variance was performed using STATA SE 17 to generate the adjusted odds ratios (AOR) and corresponding 95% confidence intervals (95% CI). A colinearity test was performed, however, factors were not found to be directly related to each other.

Each feeding style had its own model but was analyzed the same. Model 1 of the analysis included variables from block 1 (household characteristics and infant age) and remained the control for the forthcoming models. Model 2 of the analysis included variables from block 2 (maternal socio-demographics) and was adjusted by including model 1 and remained as the control for the subsequent models. Model 3 of the analysis included variables from block 3 (pregnancy and prenatal care) and was adjusted by including models 1 and 2 and remained as the control for the following models. Model 4 of the analysis included variables from block 4

(maternal mental health) and was adjusted by including the three previous models and remained as the control for the subsequent models. Model 5 of the analysis included variables from block 5 (infant characteristics) and was adjusted by including the previous four models and remained as the control for the subsequent models. Lastly, model 6 of the analysis included variables from block 6 (infant feeding) and was adjusted by including variables in the previous five models.

A p-value of <0.05 was the criterion for statistical significance at each level to evaluate the association between the covariables and the outcome. All covariables that had a p-value <0.20 from the bivariate analysis were included in the hierarchical modeling approach and were maintained in all model levels regardless of the significance attenuated, as these data provide important adjustments to the parameter estimates in the final models.

Chapter 4: Results

4.1. Descriptive Analysis

A total of 672 mothers and caregivers responded to the survey, but only 304 mothers were eligible for data analysis. Individuals were excluded from data analysis if they identified as having any exclusion criteria or did not answer any of the IFSQ questions. Therefore, the analytical sample consisted of 304 mothers in Clark County with infants between 0-23 months old. Mothers had the potential to be classified into one or more feeding styles. Of those who answered the RP feeding style questions (n=287), 53.3% were classified as RP feeders (n=153). Of those who answered the NRP-LF feeding style questions (n=293), 47.1% were classified as NRP-LF feeders (n=138). Of those who answered the NRP-PR feeding style questions (n=293), 43.0% were classified as NRP-PR feeders (n=126). Of those who answered the NRP-ID feeding style questions (n=261), 35.6% were classified as NRP-ID feeders (n=93). Lastly, of those who answered the NRP-RS feeding style questions (n=296), 50.3% of them were classified as NRP-RS feeders (n=149) **(Table 1).**

The majority of the mothers were between the ages 24-35 (n=196, 64.5%), reported to be middle income (n=201, 66.1%), lived with their partners (n=282, 92.8%), were not non-Hispanic White (n=156, 51%), and had some college or less (n=222, 73%). Around 30.3% of the respondents were at risk for food insecurity (n=92), and 12.8% were at risk for water security (n=39). Additionally, 80.3% reported not being enrolled in WIC (n=244), and 93.8% reported having any prenatal care (n=285). Pertaining to maternal mental health, approximately 36% of mothers were at risk for mild depression (n=105), 23% were at risk for moderate to severe depression(n=67), 41% were at risk for mild anxiety (n=124), 23% were at risk for moderate to severe anxiety (n=70), and 81% were at risk for parental burnout (n=245). Additionally, the

majority of the mothers believed they were overweight (n=210, 66.1%). Among infants, most of them were between the ages of 12-23 months (n=131, 43%), did not use pacifiers (n=175, 57.6%), had non-government-provided insurance (n=223, 73%), perceived as having normal weight (n=251, 82.5%), and were adequately fed (n=180, 64.3%) **(Table 1).**

Table 1. Descriptive analysis of feeding styles, household characteristics, maternal socio-demographics, prenatal care, maternal mental health, infant characteristics, and infant feeding, 2023.

Study Variables	Full Sample (N=304)	% (N*)
Caregiver Feeding Style(s)		
Responsive (RP)(n= 287)		
Yes		53.3 (153)
No		46.7 (134)
Non-responsive Laissez-faire (NRP-LF) (n= 293)		
Yes		47.1 (138)
No		52.9 (155)
Non-responsive Pressuring (NRP-PR) (n= 293)		
Yes		43.0 (126)
No		57.0 (167)
Non-responsive Indulgence(NRP-ID) (n= 261)		
Yes		35.6 (93)
No		64.4 (168)
Non-responsive Restrictive (NRP-RS) (n= 296)		
Yes		50.34 (149)
No		49.66 (147)
Block 1		
Infants Age (Constant)		
Under 6 months		33.9 (103)
Between 7 and 11 months		23.0 (70)
Between 12 and 23 months		43.1 (131)
Household Income		
Low Income (less than $49,999)		21.7 (66)
Middle Income ($50,000-$149,999)		66.1 (201)
Upper Income (More than $150,000)		12.2 (37)
Food Security		
Food Secure		69.7 (212)
Food Insecure		30.3 (92)
Water Security		
Water Secure		87.2 (265)
Water Insecure		12.8 (39)
Block 2		
Mother's Age		
18-24		12.5 (38)
25-34		64.5 (196)
35-44		23.0 (70)
Marital Status		
Living without a partner (single, widowed, separated)		7.2 (22)
Living with a partner (married, living together)		92.8 (282)
Non-Hispanic White		
Yes		48.7 (148)
No		51.3 (156)
Mother's Education		
Secondary or college		73.0 (222)
Graduate		26.9 (82)

Table 1 Continued. Descriptive analysis of feeding styles, household characteristics, maternal socio-demographics, prenatal care, maternal mental health, infant characteristics, and infant feeding, 2022.

Study Variables	Full Sample (N=304)	% (N*)
Block 3		
Any Prenatal Care (PNC) Visits		
Yes		93.8 (285)
No		6.3 (19)
WIC Enrollment		
Yes		19.7 (60)
No		80.3 (244)
Block 4		
Mother's Risk for Depression (n= 292)		
No/Minimal		41.1 (120)
Mild		35.9 (105)
Moderate/Severe		22.9 (67)
Mother's Risk for Anxiety (n=297)		
No/ Minimal		34.7 (103)
Mild		41.8 (124)
Moderate/ Severe		23.6 (70)
Mother's Risk for Burnout (n=303)		
Burnout risk		80.9 (245)
No burnout		19.1 (58)
Mother's Weight Perception		
Underweight		2.3 (7)
Normal weight		31.6 (96)
Overweight		66.1 (201)
Block 5		
Pacifier Use		
Yes		42.5 (129)
No		57.6 (175)
Infants Insurance (n=303)		
Government		26.4 (80)
Non-Government		73.6 (223)
Perception of Infant's Weight		
Underweight		9.2 (28)
Normal weight		82.6 (251)
Overweight		8.2 (25)
Block 6		
Infant Dietary Guidelines (Exclusive <6 months and Complementary <6 months) (N =280)		
Yes		64.3 (180)
No		35.7 (100)

4.2. Bivariate Analysis

RP feeding was more frequent among mothers who were between the ages 18-24 (n=25, 66%) or 35-44 (n=39, 58%) compared to mothers ages 25-34 (n=89, 49%%), who identified as Non-Hispanic White (n=81, 57%) vs. Hispanic-White (n=72, 49%%), had a college degree or less (n=119, 57%) vs. a graduate degree (n=34, 44%), and if they perceived their infant as underweight (n=19, 70%) or overweight (n=13, 54%) compared to normal weight (n=121, 51%).

NRP-LF feeding style was more frequent among mothers who classified living in a low-income household (n=37, 58%) compared to the middle (n=89, 46%) and upper (n=12, 32%) income household, were between the ages 18-24 (n=25, 67%) compared to 25-34 (n=86, 46%) and 35-44 (n=27, 39%%), enrolled in WIC (n=34, 57%) vs. not enrolled (n=104, 45%), if they perceived themselves as overweight (n=100, 52%) compared to underweight (n=2, 29%) and normal weight (n=36, 39%), and if their infant used pacifiers (n=69, 54%) vs. no pacifiers (n=69, 41%), or had government insurance (n=47, 60%) vs. non-government insurance (n=91, 42%). NRP-PR feeding style was more frequent among mothers who classified living in low-income households (n=42, 66%) compared to middle (n=73, 38%%) and upper (n=11, 30%) income households, were at risk for food insecurity (n=45, 52%) vs food secure (n=81, 39%), were at risk for water insecurity (n=25, 66%) vs. water secure (n=101, 40%), living without a partner (n=13, 59%) vs. living with a partner (n=113, 42%), who identified as Hispanic-White (n=77, 51%) vs. non-Hispanic-White (n=50, 34%), enrolled in WIC (n=29, 52%) vs. not enrolled (n=97, 41%), if their infant had government insurance (n=40, 54%) vs. non-government insurance (n=85, 39%), if they perceived their infant as underweight (n=15, 54%) or overweight (n=16, 64%) compared to normal weight (n=95, 40%), and if they were not adequately feeding their infant (n=42, 54%) compared to adequately feeding (n=62, 35%). NRP-ID feeding style was more frequent among mothers aged 18-24 (n=18, 56%) compared to mothers aged 25-34 (n=58, 35%) and 35-44 (n=17, 27%). Lastly, NRP-RS feeding style was more frequent among mothers who classified living in a low-income household (n=44, 69%) compared to the middle (n=89, 45%) and upper (n=16, 46%) income households, were at risk for food insecurity (n=53, 59%) vs. food secure (n=96, 47%), were at risk for water insecurity (n=25, 64%) vs. water secure (n=124, 48%), between the ages of 18-24 (n=25, 66%) or 35-44 (n=39, 58%) compared to 25-34 (n=85, 45%),

were not non-Hispanic White (n=86, 57%) vs. Hispanic-White (n=63, 43%), enrolled in WIC (n=39, 66%) vs. not enrolled (n=110, 46%), had no to minimal risk (n=65, 56%) or moderate to severe risk (n=34, 51.52%) for depression compared to mild risk (n=42, 41%), if their infant had government insurance (n=44, 56%) vs. non-government insurance (n=104, 48%), and if they perceived their infant as overweight (n=16, 64%) compared to normal weight (n=122 , 50%) or underweight (n=11, 39%) **(Table 2).**

Table 2. Bivariate Analysis of feeding styles by household characteristics, maternal socio-demographics, prenatal care, maternal mental health, infant characteristics, and infant feeding, 2023.

Variables	Responsive Style (N=287) N (%)	P-value	Non-responsive Feeding Styles: Laissez-faire Style (N=293) N (%)	P-value	Pressuring Style (N=293) N (%)	P-value	Indulgence Style (N=261) N (%)	P-value	Restrictive Style (N=296) N (%)	P-value
Block 1										
Household Income										
Low-income	34 (52.31)	0.977	37 (57.81)	**0.045****	42 (66.67)	**0.000****	21 (40.38)	0.457	44 (68.75)	**0.004****
Middle-income	100 (53.76)		89 (46.35)		73 (37.82)		64 (35.75)		89 (45.18)	
Upper-income	19 (52.78)		12 (32.43)		11 (29.73)		8 (8.60)		16 (45.71)	
Food Security										
Food Secure	110 (55.84)	0.204	88 (43.35)	**0.053****	81 (39.32)	**0.050****	61 (33.70)	0.327	96 (46.60)	**0.052****
Food Insecure	43 (47.78)		138 (47.10)		45 (51.72)		32 (40.00)		53 (58.89)	
Water Security										
Water Secure	133 (53.41)	0.928	117 (45.70)	0.208	101 (39.61)	**0.002****	78 (34.36)	0.268	124 (48.25)	**0.065****
Water Insecure	20 (52.63)		21 (56.76)		25 (65.79)		15 (44.12)		25 (64.10)	
Block 2										
Mother's Age										
18-24	25 (65.79)	**0.108****	25 (67.57)	**0.016****	20 (55.56)	0.245	18 (56.25)	**0.020****	25 (65.79)	**0.019****
25-34	89 (48.90)		86 (46.24)		79 (42.02)		58 (34.73)		85 (44.50)	
35-44	39 (58.21)		27 (38.57)		27 (39.13)		17 (27.42)		39 (58.21)	
Marital Status										
Living without a partner	12 (54.55)	0.904	10 (45.45)	0.872	13 (59.09)	**0.113****	4 (19.05)	**0.098****	12 (54.55)	0.682
Living with a partner	141 (53.21)		128 (47.23)		113 (41.70)		89 (37.08)		137 (50.00)	
Non-Hispanic White										
Yes	81 (57.45)	**0.167****	61 (43.26)	0.205	50 (34.38)	**0.004****	42 (32.81)	0.351	63 (43.45)	**0.020****
No	72 (49.32)		77 (50.66)		76 (51.35)		51 (38.35)		86 (56.95)	
Mother's Education										
Secondary level or college	119 (56.67)	**0.060****	107 (50.00)	**0.102****	99 (46.70)	**0.039****	67 (35.26)	0.839	113 (52.31)	0.264
Graduate Degree	34 (44.16)		31 (39.24)		27 (33.33)		26 (36.62)		36 (45.00)	
Block 3										
Any Prenatal Care (PNC) Visits										
Yes	142 (52.99)	0.678	132 (48.00)	0.227	125 (45.29)	**0.001****	91 (37.60)	**0.018****	39 (50.18)	0.836
No	11 (57.89)		6 (33.33)		1 (5.88)		2 (10.53)		10 (52.63)	
WIC Enrollment										
Yes	30 (50.85)	0.671	34 (56.67)	**0.096****	29 (51.79)	**0.140****	21 (40.38)	0.424	39 (66.10)	**0.007****
No	123 (53.95)		104 (44.64)		97 (40.93)		72 (34.45)		110 (46.41)	

****P<0.20**

Table 2 Continued. Bivariate Analysis of feeding styles by household characteristics, maternal socio-demographics, prenatal care, maternal mental health, infant characteristics, and infant feeding, 2023.

Variables	Responsive Style (N=287) N (%)	P-value	Non-Responsive Feeding: Laissez-faire Style (N=293) N (%)	P-value	Pressuring Style (N=293) N (%)	P-value	Indulgence Style (N=261) N (%)	P-value	Restrictive Style (N=296) N (%)	P-value
Block 4										
Mother's Risk for Depression (N=276)										
No/Minimal	59 (51.30)	0.557	56 (47.86)	0.930	56 (48.28)	0.267	33 (32.04)	0.640	65 (55.56)	**0.098****
Mild	56 (57.14)		48 (46.15)		39 (38.61)		34 (37.78)		42 (41.18)	
Moderate/Severe	31 (49.21)		27 (45.00)		25 (38.46)		22 (37.93)		34 (51.52)	
Mother's Risk for Anxiety (N=282) tab										
No/Minimal	53 (53.00)	0.870	47 (46.53)	0.982	47 (46.53)	**0.147****	29 (31.87)	**0.191****	57 (55.58)	0.332
Mild	63 (54.78)		56 (46.28)		55 (46.22)		36 (33.96)		59 (48.76)	
Moderate/ Severe	34 (50.75)		31 (47.69)		22 (32.84)		27 (45.76)		30 (44.78)	
Mother'sRisk for Burnout										
Burnout risk	123 (53.02)	0.838	111 (46.84)	0.853	103 (43.10)	0.968	79 (37.62)	0.202	120 (50.42)	0.951
No burnout	30 (54.55)		27 (48.21)		23 (43.40)		14 (28.00)		296 (50.88)	
Mother's Weight Perception										
Underweight	5 (71.43)	0.423	2 (28.57)	**0.070****	3 (42.86)	0.827	3 (42.86)	0.532	3 (42.86)	0.916
Normal weight	51 (56.67)		36 (38.71)		38 (40.43)		26 (30.95)		47(50.00)	
Overweight	97 (51.05)		100 (51.81)		85 (44.27)		64 (37.65)		99 (50.77)	
Block 5										
Pacifier Use										
Yes	62 (52.10)	0.730	69 (54.76)	**0.022****	58 (46.77)	0.264	39 (36.45)	0.818	61 (48.41)	0.568
No	91 (54.17)		69 (41.32)		68 (40.24)		54 (35.06)		88 (51.76)	
Infants Insurance (N=286)										
Government	45 (57.69)	0.384	47 (60.26)	**0.007****	40 (54.05)	**0.024****	30 (46.15)	**0.044****	44 (56.41)	**0.199****
Non-Government	108 (51.92)		91 (42.52)		85 (38.99)		63 (32.31)		104 (47.93)	
Perception of Infants Weight										
Underweight	19 (70.37)	**0.169****	13 (46.43)	0.641	15 (53.57)	**0.031****	9 (34.62)	0.911	11 (39.29)	**0.198****
Normal weight	121 (51.17)		112 (46.28)		95 (39.58)		76 (35.35)		122 (50.21)	
Overweight	13 (54.17)		13 (56.52)		16 (64.00)		8 (40.00)		16 (64.00)	
Block 6										
Infant Dietary Guidelines (Exclusive Breastfeeding (<6 months) and Complementary Feeding (>6 months))										
Yes	94 (54.02)	0.628	79 (45.40)	0.421	62 (35.43)	**0.003****	52 (33.55)	0.453	88 (49.72)	0.834
No	52 (57.14)		48 (50.53)		52 (54.17)		33 (38.37)		49 (51.04)	

****P<0.20**

4.3 Logistic Regression Following a Hierarchical Modeling Approach

Responsive feeding style was considered a positive outcome, and any factor with an AOR below one was considered a protective factor, while any factor with an AOR above one decreased the likelihood of being responsive. For example, a mother had increased odds of exhibiting an RP feeding style if they were between the ages 25-34 (AOR=0.49, 95% CI [0.24-1.00]) when being compared to a non-responsive feeding. Additionally, a mother had increased odds of exhibiting an RP feeding style if they had a graduate degree (OR=0.58, 95% CI [0.22-1.00]) in the level 2 model, and if they perceived their infant as having normal weight (AOR=0.40, 95% CI [0.16-0.97]) in the level 5 model.

Non-responsive feeding styles were considered negative outcomes; any factor with an AOR below one meant decreasing the likelihood of being non-responsive, and everything with an AOR above one meant increasing the likelihood of being non-responsive. For example, a mother had decreased odds of exhibiting an NRP-LF feeding style if they were between the ages 35-44 (AOR=0.41, 95% CI [0.17-1.00]) in the level 2 model compared to an individual who did not exhibit an NRP-LF feeding style. A mother had decreased odds of exhibiting an NRP-PR feeding style if they classified as living in a middle-income (AOR=0.32, 95% CI [0.16-0.63]) or upper-income (AOR=0.24, 95% CI [0.09-0.64]) household in the level 2 model, if they did not have any type of prenatal care (AOR=0.07, 95% CI [0.01-0.52]) in the level 3 model, and if they had moderate to severe risk for anxiety (AOR=0.32, 95% CI [0.14-0.74]) in the level 4 model. A mother had increased odds of exhibiting an NRP-PR feeding style if they were at risk for water security (AOR=2.46, 95% CI [1.00-6.06]) in the level 1 model and if she was not enrolled in WIC (AOR=2.47, 95% CI [1.00-6.15]) in the level 3 model. A mother had decreased odds of exhibiting an NRP-ID feeding style if they were between the ages of 25-34 (AOR=0.37, 95% CI

(0.16-0.82) or 35-44 (AOR=0.27, 95% CI [0.10-0.68]) in the level 2 model and if they did not have any type of prenatal care (AOR=0.21, 95% CI [0.04-1.00]) in the level 3 model. A mother had decreased odds of exhibiting NRP-RS feeding styles if they were classified as living in a middle-income (AOR=0.38, 95% CI [0.19-0.74]) or upper-income (AOR=0.38, 95% CI [0.14-0.98]) household in the level 1 model, or if she had a mild risk for depression (AOR=0.50, 95% CI [0.28-0.90]) in the level 4 model. However, they had increased odds of exhibiting an NRP-RS feeding style if their infant had non-government insurance (AOR=2.78, 95% CI [1.13-6.82]) in the level 5 model.

Table 3. Logistic regression following a hierarchical modeling approach of feeding styles by household characteristics, maternal socio-demographics, prenatal care, maternal mental health, infant characteristics, and infant feeding, adjusted for infant age, 2023.

Variables	Responsive Style (Positive) AOR (95% CI)	Non-Responsive Feeding			
		Laissez-faire Style (Negative) AOR (95% CI)	Pressuring Style (Negative) AOR (95% CI)	Indulgence Style (Negative) AOR (95% CI)	Restrictive Style (Negative) AOR (95% CI)
Model 1					
Household Income					
Low-income	-	1	1	-	1
Middle-income	-	0.73 (0.39-1.36)	***0.32 (0.16-0.63)↓**	-	***0.38 (0.19-0.74)↓**
Upper-income	-	0.47 (0.18-1.19)	***0.24 (0.09-0.64)↓**	-	***0.38 (0.14-0.98)↓**
Food Security					
Food Secure	-	1	1	-	1
Food Insecure	-	1.44 (0.81-2.55)	0.73 (0.35-1.49)	-	0.96 (0.48-1.89)
Water Security					
Water Secure	-	-	1	-	1
Water Insecure	-	-	***2.46 (1.00-6.06)↑**	-	1.35 (0.55-3.33)
Model 2					
Mother's Age					
18-24	1	1	-	1	1
25-34	***0.49 (0.24-1.00)↑**	0.51 (0.23-1.13)	-	***0.37 (0.16-0.82)↓**	0.56 (0.25-1.22)
35-44	0.76 (0.33-1.74)	***0.41 (0.17-1.00)↓**	-	***0.27 (0.10-0.68)↓**	1.04 (0.42-2.55)
Marital Status					
Living without a partner	-	-	1	1	-
Living with a partner	-	-	0.71 (0.27-1.85)	2.88 (0.85-9.73)	-
Non-Hispanic White					
Yes	1	-	1	-	1
No	0.63 (0.39-1.02)	-	1.54 (0.93-2.57)	-	1.40 (0.84-2.31)
Mother's Education					
Secondary level or college	1	1	1	-	-
Graduate Degree	***0.58 (0.33-1.00)↑**	0.86 (0.48-1.53)	0.82 (0.46-1.48)	-	-
Model 3					
Any Prenatal Care (PNC) Visits					
Yes	-	-	1	1	-
No	-	-	***0.07 (0.01-0.52)↓**	***0.21 (0.04-1.00)↓**	-
WIC Enrollment					
Yes	-	1	1	-	1
No	-	0.98 (0.46-2.08)	***2.47 (1.00-6.15)↑**	-	0.78 (0.35-1.75)

Responsive Style: [a]Model 1: adjusted by infant age. [b]Model 2: Model 1 + mother's age, non-Hispanic White, and Education. [c]Model 5: Model 2 + perception of infants weight. **Laissez-faire Style:** [a]Model 1: adjusted by the age of the infant, household income, and food security. [b]Model 2: Model 1 + mother's age and education. [c]Model 3: Model 2 + WIC enrollment. [d]Model 4: Model 3 + Mother's weight perception. [e]Model 5: Model 4 + pacifier use and infant's insurance. **Pressuring Style:** [a]Model 1: adjusted by the age of the infant, household income, food security, and water security. [b]Model 2: Model 1 + marital status, non-hispanic white, and education. [c]Model 3: Model 2 + any prenatal care and WIC enrollment. [d]Model 4: Model 3 + Mother's risk for anxiety. [e]Model 5: Model 4 + infant's insurance and perception of infant's weight. [f]Model 6: Model 5 + dietary guidelines. **Indulgence Style:** [a]Model 1: adjusted by the age of the infant. [b]Model 2: Model 1 + mother's age and marital status. [c]Model 3: Model 2 + any prenatal care. [d]Model 4: Model 3 + mother's risk for anxiety. [e]Model 5: Model 4 + infant's insurance. **Restrictive Style:** [a]Model 1: adjusted by the age of the infant, household income, food security, and water security. [b]Model 2: Model 1 + mother's age and non-hispanic white. [c]Model 3: Model 2 + WIC enrollment. [d]Model 4: Model 3 + mother's risk for depression. [e]Model 5: Model 4 + infant's insurance. ***P<0.05**
↑ Increasing the likelihood of exhibiting a feeding style, ↓ Decreasing the likelihood of exhibiting a feeding style.

Table 3 Continued. Logistic regression following a hierarchical modeling approach of feeding styles by household characteristics, maternal socio-demographics, prenatal care, maternal mental health, infant characteristics, and infant feeding, adjusted for infant age, 2023

Variables	Responsive Style (Positive) AOR (95% CI)	Non-Responsive Feeding			
		Laissez-faire Style (Negative) AOR (95% CI)	Pressuring Style (Negative) AOR (95% CI)	Indulgence Style (Negative) AOR (95% CI)	Restrictive Style (Negative) AOR (95% CI)
Model 4					
Mother's Risk for Depression (N=276)					
No/Minimal	-	-	-	-	1
Mild	-	-	-	-	***0.50 (0.28-0.90)↓**
Moderate/Severe	-	-	-	-	0.72 (0.36-1.44)
Mother's Risk for Anxiety (N=282)					
No/ Minimal	-	-	1	1	-
Mild	-	-	0.78 (0.43-1.41)	0.91 (0.48-1.71)	-
Moderate/ Severe	-	-	***0.32 (0.14-0.74)↓**	1.72 (0.85-3.47)	-
Mother's Risk for Burnout					
Burnout risk	-	-	-	-	-
No burnout	-	-	-	-	-
Mother's Weight Perception					
Underweight	-	1	-	-	-
Normal weight	-	1.54 (0.25-9.20)	-	-	-
Overweight	-	2.47 (0.42-14.42)	-	-	-
Model 5					
Pacifier Use					
Yes	-	1	-	-	-
No	-	0.66 (0.39-1.09)	-	-	-
Infants Insurance (N=286)					
Government	-	1	1	1	1
Non-Government	-	0.52 (0.23-1.16)	1.01 (0.34-3.05)	0.60 (0.30-1.18)	***2.78 (1.13-6.82)↑**
Perception of Infants Weight					
Underweight	1	-	1	-	-
Normal weight	***0.40 (0.16-0.97)↑**	-	0.47 (0.19-1.15)	-	-
Overweight	0.38 (0.11-1.29)	-	1.28 (0.35-4.56)	-	-
Model 6					
Infant Dietary Guidelines (Exclusive Breastfeeding (<6 months) and Complementary Feeding (>6 months))					
Yes	-	-	1	-	-
No	-	-	1.74 (0.90-3.37)	-	-

Responsive Style: [a]Model 1: adjusted by infant age. [b]Model 2: Model 1 + mother's age, non-Hispanic White, and Education. [c]Model 5: Model 2 + perception of infant's weight. **Laissez-faire Style:** [a]Model 1: adjusted by the age of the infant, household income, and food security. [b]Model 2: Model 1 + mother's age and education. [c]Model 3: Model 2 + WIC enrollment. [d]Model 4: Model 3 + Mother's weight perception. [e]Model 5: Model 4 + pacifier use and infant's insurance. **Pressuring Style:** [a]Model 1: adjusted by the age of the infant, household income, food security, and water security. [b]Model 2: Model 1 + marital status, non-hispanic white, and education. [c]Model 3: Model 2 + any prenatal care and WIC enrollment. [d]Model 4: Model 3 + Mother's risk for anxiety. [e]Model 5: Model 4 + infant's insurance and perception of infant's weight. [f]Model 6: Model 5 + dietary guidelines. **Indulgence Style:** [a]Model 1: adjusted by the age of the infant. [b]Model 2: Model 1 + mother's age and marital status. [c]Model 3: Model 2 + any prenatal care. [d]Model 4: Model 3 + mother's risk for anxiety. [e]Model 5: Model 4 + infant's insurance. **Restrictive Style:** [a]Model 1: adjusted by the age of the infant, household income, food security, and water security. [b]Model 2: Model 1 + mother's age and non-hispanic white. [c]Model 3: Model 2 + WIC enrollment. [d]Model 4: Model 3 + mother's risk for depression. [e]Model 5: Model 4 + infant's insurance. ***P<0.05**

↑ Increasing the likelihood of exhibiting a feeding style, ↓ Decreasing the likelihood of exhibiting a feeding style.

Chapter 5: Discussion and Conclusion

5.1. Discussion

Our study identified socio-ecological factors associated with caregivers' RP and NRP (laissez-faire, restrictive, indulgent, and pressuring) feeding styles. Maternal socio-demographic and infant characteristics were associated with RP and NRP feeding styles. Additionally, household, maternal mental health, and pregnancy and prenatal care factors were associated with NRP feeding styles. Furthermore, no associations were found between caregivers' feeding styles and infant feeding outcomes. To our knowledge, this is the first study in Nevada focusing on caregivers' feeding styles as a predictor of ECO. This is especially important in the context of urban areas in Nevada because of their high prevalence of ECO. Our study provides insights into socio-ecological factors that cause dissimilarities in caregivers' feeding styles that could be potentially used to tailor educational approaches to address disparities in ECO.

Regarding maternal socio-demographics, adult mothers (aged 25-34) were more likely to be an RP feeder compared to young mothers (ages 18-24). Not many studies have focused on maternal age and feeding styles. However, past research observed that mothers who have gained experience over time were more confident in feeding responsively (Redsell et al., 2021). This suggests that adult mothers may be more likely to feed responsively because they have had more practice and understanding. Secondly, consistent with previous research, our results suggest that mothers with higher education are more likely to practice RP feeding styles. Studies have shown that maternal education is strongly associated with adequate eating behaviors and RP feeding styles (Coleta et al., 2022). Mothers with higher incomes and education were found to believe in their infant’s ability to recognize their hunger and satiety cues (Redsell et al., 2021). It is

plausible to assume that mothers with higher education levels have more access to knowledge on feeding practices and, therefore, are more aware of their infant's cues.

In relation to infant characteristics, a mother had a higher potential to be an NRP feeder if their infant had non-government insurance. No other studies have gone in-depth into the relationship between infant insurance and caregivers' feeding styles. However, individuals with non-government insurance (e.g., private insurance) have been shown to have higher access to high-quality care and higher diagnoses for allergies and dietary restrictions (Sommers et al., 2016; Stingone et al., 2008). Therefore, it is likely that increased access to care and testing may also increase caregivers' knowledge of their infant's allergies and dietary restrictions, thus causing them to present more NRP feeding styles. Our study found that mothers were more likely to be an RP feeder if the mother perceived their infant as having normal weight (Cachelin et al., 2013; Harbron et al., 2013). Evidence from previous studies suggests that mothers who are more worried about their infant's weight (e.g., obesity or malnutrition) were more likely to exhibit NRP feeding styles than mothers with perceived normal-weight infants (Cachelin et al., 2013; Harbron et al., 2013). Thus, mothers who perceive their infant as having normal weight tend to be less worried and are more likely to feed their children responsively.

Concerning household characteristics, mothers in higher-income households were less likely to be NRP feeders. Consistent with previous literature, higher-income families have more resources and fewer worries about food waste (Srivastava et al., 2021). Thus, they were less likely to pressure or restrict their infant while eating (Srivastava et al., 2021). On the other hand, if a mother is at risk for water insecurity, it increases the likelihood of being an NRP feeder. Individuals are at risk for water insecurity if they lack water availability, accessibility, use, and stability (Miller et al., 2021). As far as we know, our study is one of the first to study the

association between water insecurity and NRP feeding. This is important because, due to climate changes, the availability of water may be lower at higher costs, thus generating stress on the caregivers' because they are competing financially with other priorities. This, in turn, may impact a caregivers' ability to practice RP feeding due to time and opportunity costs associated with water insecurity (Miller et al., 2021). Water security should continue to be monitored because Nevada is a part of the U.S. Southwest region that is currently going through drought and water shortages (Cheek et al., 2016). This is heightened for Clark County, as it is in the middle of a desert with a limited water supply. Therefore, this finding is important, especially in the context of Clark County, Nevada.

Maternal mental health, including a mild risk for depression and a moderate to severe risk for anxiety, decreased the likelihood of a mother being an NRP feeder. This is inconsistent with previous findings because they have shown that depression and anxiety increase the likelihood of an NRP feeding style (Coleta et al., 2022). These differences may be explained by skewed results due to the stigma associated with mental health (Coleta et al., 2022). However, the negative emotional response from mental health may cause mothers to reduce their capacity for interaction and engagement to feed responsively and their capacity to feed non-responsively (Redsell et al., 2021).

Pertaining to pregnancy and prenatal care characteristics, unlike what we expected, mothers had lower odds of being NRP feeders when they did not receive prenatal care. There is a lack of studies focusing on prenatal care and its impact on RP feeding styles; therefore, there are no viable explanations for why we observe this association. However, there may be no difference between the prenatal and non-prenatal groups, as we do not know if RP feeding is even discussed during visits. Other studies on infant feeding explained that prenatal visits tend to emphasize

breastfeeding practices, complementary feeding, and adequate nutrition but not feeding styles (Dembinski et al., 2021). We found that when a mother was not enrolled in WIC, they had a higher probability of being a NRP feeder. Not only is WIC a nutritional supplementation program that provides nutrition education and food benefits, but it has also been uncovered that WIC staff have the resources to educate mothers on identifying and responding to their infant's hunger and satiety cues (Hudak et al., 2021). Therefore, mothers enrolled in WIC might obtain more RP feeding advice than mothers who are not, causing non-enrollees to be more likely to be NRP feeders.

Contrary to what was expected, there were no independent associations between infant feeding outcomes with RP feeding. Corroborating our findings, previous studies investigating this association explained that although caregivers adequately feed their infants, they may lack the skills to responsively feed (Redsell et al., 2021). Barriers these studies mentioned to RP feeding included balancing milk consumption recommendations and infant feeding cues, recognizing and responding to their infant's cues, and a mother's ability to soothe without food (Redsell et al., 2021). Although there were no significant associations, further studies should be conducted to understand the relationship between RP feeding and infant feeding outcomes because prior studies have observed that RP feeding helps infants develop healthy dietary habits and learn to self-regulate (Perez-Escamilla et al., 2020).

Our study has strengths and limitations that need to be considered when generalizing our findings. First, this study was cross-sectional; therefore, we are not able to infer causation. Despite this, a strength is that our study provides a baseline of specific factors that influence RP and NRP feeding styles, which future researchers can use to create hypotheses for further studies. Second, this study utilized self-reported measures, such as maternal mental health and

caregivers' feeding practices and beliefs, causing self-reported bias. However, a strength is that the questions used for these measures are from valid and reliable instruments. Third, this study utilized a snowball convenience sample of mothers and caregivers with infants under two years old across Clark County, Nevada. A pro of using this type of sampling is that it was an easy way to obtain our target sample size, however, a con is that the participants could all come from the same geographical location, socioeconomic statuses, or ethnic backgrounds (Emerson, 2015). Attempts to recruit a more diverse population were made by reaching birth, pediatric, and lactation centers within Clark County. However, the majority of the 2022 EARN surveys' sample was recruited through paid social media advertisements. Although this may have restricted the diversity of our sample, a strength is that our sample had similar demographic data to Clark County's available data. Fourth, this study is limited to the mothers and caregivers of one geographical area, i.e., Clark County, so data will not reflect the U.S. child obesity population. However, since Clark County is the largest urban area in Nevada and is very diverse, findings can be generalized to other similar urban areas in the U.S. Lastly, we opted to classify our RP and NRP outcomes as binary rather than continuous variables, after conducting sensitivity analysis and finding similar results. Our option to use binary variables relies on our hypothesis to identify association with socioecological factors with each caregiver feeding style. Although very scarce, there have been a few similar studies that look at the factors influencing caregivers' feeding styles (Sandow et al., 2020; Redsell et al., 2021; Morandi et al., 2020; Hudak et al., 2021; Harbron et al., 2013; Heller et al., 2019; Holley et al., 2021; Perez-Escamilla et al., 2019). However, this study is innovative because it identified some variables that other studies have not. For example, associations between maternal age, infant insurance, water insecurity,

prenatal care, WIC enrollment and a caregivers' feeding style. Additionally, to our knowledge, this is the first study focusing on caregivers' feeding styles in Clark County.

Our study presents factors that cause dissimilarities in caregivers' feeding styles that can contribute to disparities in ECO development. Prior studies have exhibited that RP and NRP feeding styles influence ECO, with RP feeding nurturing healthy eating and growth and NRP feeding creating overnutrition and obesity (Harbron et al., 2013). Therefore, longitudinal studies investigating the mechanisms through which RP feeding can improve ECO should be conducted (Harbron et al., 2013). These studies should consider clarifying the role of cofounders influencing RP feeding found in our study, such as water insecurity, anxiety and depression, and looking at current prenatal care counseling on responsive care. In addition, further qualitative investigation should explore how caregivers could overcome barriers to RP feeding skills, which would provide new insight into prevention mechanisms for ECO and could inform guidelines for educating caregivers about infant feeding styles and behaviors as a way of ECO prevention.

Additionally, our study could contribute to the development of policies surrounding household insecurity, as our study found that household factors including income, food, and water insecurity plays a role in the feeding styles of mothers. Our study also shows that maternal age and education serves as proxy's to household insecurity, and policies to support mothers at certain ages and helping them to obtain better education could support addressing household insecurity. Lastly, the development of policies to increase the reach and utilization of WIC, as our study shows that WIC participation is a protective factor for RP feeding.

5.2. Conclusion

Socio-ecological factors, including household, maternal socio-demographic, infant characteristics, pregnancy and prenatal care, and maternal mental health, were associated with

caregivers' RP and NRP feeding styles in a diverse sample of caregiver-infant dyads living in urban areas in Nevada. These findings can be used to inform educational approaches to support responsive feeding as a way of preventing ECO, a public health crisis in the U.S.

Appendix A: Survey Instruments

Table 4: Survey instruments used in the survey, questions, and scoring, 2023.

# of Items	Instrument	Question(s)	Scoring
10	Edinburgh Postnatal Depression Scale	(1) I have been able to laugh and see the funny side of things. (2) I have looked forward with enjoyment to things. (3) I have blamed myself unnecessarily when things went wrong. (4) I have been anxious or worried for no good reason. (5) I have felt scared or panicky for no good reason. (6) Things have been getting to me. (7) I have been so unhappy that I have had difficulty sleeping. (8) I have felt sad or miserable. (9) I have been so unhappy that I have been crying. (10) The thought of harming myself has occurred to me.	Scale from 0-3. <u>Scores:</u> -No or minimal depression risk (0-6) -Mild depression risk (7-13) -Moderate depression risk (14-19) -Severe depression risk (19-30)
7	General Anxiety Disorder- 7	(1) Feeling nervous, anxious or on edge. (2) Not being able to stop or control worrying. (3) Worrying too much about different things. (4) Trouble relaxing. (5) Being so restless that it is hard to sit still. (6) Becoming easily annoyed or irritable. (7) Feeling afraid, as if something awful might happen.	Scale from 0-3. <u>Scores:</u> -Minimal anxiety risk (0-4) -Mild anxiety risk (5-9) -Moderate anxiety risk (10-14) -Severe anxiety risk (15-21).
5	Brief Parental Burnout Scale	(1) I'm so tired out by my role as a parent that sleeping doesn't seem like enough. (2) I have the sense that I'm really worn out as a parent. (3) I have the impression that I'm looking after my child(ren) on autopilot (I do what I'm supposed to do for my child(ren), but nothing more). (4) I am no longer able to show my child(ren) how	A "daily," B "Once or twice a week," and C "More seldom/never." If a parent answers "A" to at least one question or "B" to at least two questions, they are at risk for parental burnout.

		much I love them. (5) I feel like I can't take any more as a parent.	
2	Hunger Vital Sign	(1) Within the past 12 months, we worried whether our food would run out before we got money to buy more. (2) Within the past 12 months, we bought food that just didn't last and we didn't have money to get more.	Never true/ Sometimes true/ Often true. If an individual answers sometimes true or often true to any of these questions, they are at risk for food insecurity.
1	Household Water Insecurity Access Scale	Within the past 12 months, we worried about not having enough money to afford access to clean water (i.e., drinking water, bathing/washing hands, washing clothes, or any other needs).	Never true/ Sometimes true/ Often true. If an individual answers sometimes true or often true to this question, they are at risk for water insecurity.
83	Infant Feeding Style Questionnaire	Appendix B	Scale 1-5. Scoring: -Take the overall mean score of the feeding style questions. -If an individual scores above that mean, they are classified as having a feeding style. -If an individual scores below that mean, they are classified as not having that feeding style.

Appendix B: Infant Feeding Style Questionnaire

(Thompson et al., 2009)

Table 5. Laissez-faire feeding style questions, 2023.

LF1	When (name of child) has/had a bottle, I prop/propped it up
LF2	(Child) watches TV while eating
LF3	I watch TV while feeding (child)
LF4	I think it is okay to prop an infant's bottle
LF5	It's okay for a toddler to walk around while eating as long as s/he eats
LF6	I keep track of what food (child) eats
LF7	I keep track of how much food (child) eats
LF8	I make sure (child) does not eat sugary food like candy, ice cream, cakes, or cookies
LF9	I make sure (child) does not eat junk food like potato chips, Doritos, and cheese puffs
LF10	A toddler should be able to eat whatever s/he wants for snacks
LF11	A toddler should be able to eat whatever s/he wants when eating out at a restaurant

Table 6. Pressuring feeding style questions, 2023.

PR1	Try to get (child) to finish his/her food
PR2	If (child) seems full, encourage to finish anyway
PR3	Try to get (child) to finish breastmilk or formula
PR4	Try to get (child) to eat even if not hungry
PR5	Insist re-try new food refused at same meal
PR6	Praise after each bite to encourage finish food
PR7	Important for toddler finish all food on his/her plate
PR8	Important for infant finish all milk in his/her bottle
PR11	Give/gave (child) cereal in the bottle
PR12	Cereal in bottle helps infant sleep thru the night
PR13	Putting cereal in bottle good b/c helps infant feel full

PR14	An infant <6 months needs more than formula or breastmilk to be full
PR15	An infant <6 months needs more than formula or breastmilk to sleep through the night
PR16	When (child) cries, I immediately feed him/her
PR17	Best way to make infant stop crying is to feed
PR18	Best way to make toddler stop crying is to feed
PR19	When infant cries, usually means s/he needs to be fed

Table 7. Restrictive feeding style questions, 2023.

RS1	I carefully control how much (child) eats
RS2	I am very careful not to feed (child) too much
RS3	Important parent has rules re: how much toddler eats
RS4	Important parent decides how much infant should eat
RS5	I let (child) eat fast food
RS6	I let (child) eat junk food
RS7	A toddler should never eat fast food
RS8	An infant should never eat fast food
RS9	A toddler should never eat sugary food like cookies
RS10	A toddler should never eat junk food like chips
RS11	A toddler should only eat healthy food

Table 8. Responsive feeding style questions, 2023.

RP1	(Child) lets me know when s/he is full
RP2	(Child) lets me knows when s/he is hungry
RP3	I let (child) decide how much to eat
RP4	I pay attention when (child) seems to be telling me that s/he is full or hungry
RP5	I allow (child) to eat when s/he is hungry
RP6	Child knows when s/he is full
RP7	Child knows when hungry, needs to eat

RP8	Talk to (child) to encourage to drink formula/breastmilk
RP9	Talk to (child) to encourage him/her to eat
RP10	Show (child) how to eat by taking a bite or pretending
RP11	I will retry new foods if they are rejected at first
RP12	Important to help or encourage a toddler to eat

Table 9. Indulgence feeding style questions, 2023.

ID1	Allow child watch TV while eating if s/he wants
ID2	Allow child to eat fast food if s/he wants
ID3	Allow child to drink sugary drinks/soda if s/he wants
ID4	Allow child to eat desserts/sweets if s/he wants
ID5	Toddlers should be allowed to watch TV while eating if they want
ID6	Toddlers should be allowed to eat fast food if they want
ID7	Toddlers should be allowed to drink sugary drinks/soda if they want
ID8	Toddlers should be allowed to eat desserts/sweets if they
ID9	Allow child watch TV while eating to make sure s/he gets enough
ID10	Allow child to eat fast food to make sure s/he gets enough
ID11	Allow child to drink sugary drinks/soda to make sure s/he gets enough
ID12	Allow child to eat desserts/sweets to make sure s/he gets enough
ID13	Toddlers should be allowed to watch TV while eating to make sure they get enough
ID14	Toddlers should be allowed to eat fast food to make sure they get enough
ID15	Toddlers should be allowed to drink sugary drinks/soda to make sure they get enough
ID16	Toddlers should be allowed to eat desserts/sweets to make sure they get enough
ID17	Allow child watch tv while eating to keep him/her from crying
ID18	Allow child to eat fast food to keep him/her from crying
ID19	Allow child to drink sugary drinks/soda to keep him/her from crying
ID20	Allow child to eat desserts/sweets to keep him/her from crying
ID21	Toddlers should be allowed to watch tv while eating to keep them from crying

ID22	Toddlers should be allowed to eat fast food to keep them from crying
ID23	Toddlers should be allowed to drink sugary drinks/soda to keep them from crying
ID24	Toddlers should be allowed to eat desserts/sweets to keep them from crying
ID25	Allow child watch tv while eating to keep him/her happy
ID26	Allow child to eat fast food to keep him/her happy
ID27	Allow child to drink sugary drinks/soda to keep him/her happy
ID28	Allow child to eat desserts/sweets to keep him/her happy
ID29	Toddlers should be allowed to watch tv while eating to keep them happy
ID30	Toddlers should be allowed to eat fast food to keep them happy
ID31	Toddlers should be allowed to drink sugary drinks/soda to keep them happy
ID32	Toddlers should be allowed to eat desserts/sweets to keep them happy

Appendix C: Outcome Table

Table 10: Definitions, classifications, mean, and standard deviation of study outcomes, 2023.

# of Items	Outcome	Definition	Classification	Mean	Standard Deviation
12	Responsive Feeding	Parent is attentive to child hunger and satiety cues and monitors the quality of the child's diet (Thompson et al., 2009)	Responsive Non-Responsive	4.06	0.03
11	Laissez-faire feeding (Non-Responsive)	Parent does not limit infant's diet quality or quantity and shows little interaction with the infant during feeding (Thompson et al., 2009)	Laissez-faire Not laissez-faire	2.95	0.02
17	Pressuring feeding (Non-Responsive)	The parent is concerned with increasing the amount of food the infant consumes and uses food to soothe the infant (Thompson et al., 2009)	Pressuring Not pressuring	2.01	0.03
32	Indulgent feeding (Non-Responsive)	Parent does not set limits on the quantity or quality of food consumed (Thompson et al., 2009)	Indulgent Not Indulgent	1.50	0.03
11	Restrictive feeding (Non-Responsive)	Parent limits the infant to healthful foods and limits the quantity of food consumed (Thompson et al., 2009)	Restrictive Not Restrictive	2.62	0.03

Appendix D: Covariates Table

Table 11. Definitions and classifications of study covariables, 2023.

Covariables	Definition	Classification
Household Characteristics		
Household Income	Measure of the combined incomes of all individuals in a household.	Low income (less than $49,999) Middle income ($50,000-$149,999 Upper income (more than $150,000)
Food Security per the Hunger Vital Sign	Lack of consistent access to enough food for an active, healthy life (Taher et al., 2022).	Food secure Food insecure
Water Security per the Household Water Insecurity Access Scale	Lack of consistent access to enough water for productivity and survival (Miller et al., 2021).	Water Secure Water Insecure
Maternal background and Characteristics		
Age	Age of the mother.	18 - 24 25 - 34 35 – 44
Marital Status	The state of being married or not married.	Living without a partner (single, widowed, separated) Living with a partner (married, living together)
Non-Hispanic White	Race refers to the physical characteristics of a person, like skin color, while ethnicity refers to cultural characteristics like religion, history, language, and customs. (Blakemore, 2021)	Yes No
Education	The level of education the mother has obtained.	Secondary or college Graduate

Pregnancy and Prenatal Care		
Any prenatal care	If the mother saw a health care professional during pregnancy for prenatal care.	Yes No
WIC Enrollment	Is the participant currently enrolled in WIC and receiving WIC benefits	Yes No
Maternal Mental Health		
Depression per the Edinburgh Postnatal Depression Scale (EPDS)	An illness that negatively affects how you feel, the way you think, and how you act (Depression, n.d.)	None or minimal depression risk Mild depression risk Moderate/Severe depression Risk
Anxiety per the Generalized Anxiety Disorder Scale (GAD-7)	An emotion characterized by feelings of tension, fear, dread, uneasiness, worried thoughts, and physical changes (like increased blood pressure). (American Psychological Association, n.d.)	Minimal anxiety risk Mild anxiety risk Moderate to Severe anxiety risk
Parental Burnout	An individual's emotional distress, exhaustion, and feelings from being a parent (Aunola et al., 2021).	Burnout Risk No Burnout Risk
Weight Perception	Personal evaluation of one's weight.	Underweight Normal weight Overweight
Infant Characteristics and Background		
Age	The amount of time during which the infant has lived or existed.	Under 6 months Between 7 and 11 months Between 12 and 23 months

Covered by health insurance	The type of insurance the infant is covered by.	Government Non-Government
Perception of Child's Weight	Caregivers' perception of infants' weight.	Underweight Normal weight Overweight
Infant Feeding		
Infant Dietary Guidelines	**Exclusive breastfeeding <6 months:** Exclusive breastfeeding means feeding your baby only breast milk, not any other foods or liquids (including infant formula or water), except for medications or vitamin and mineral supplements. (CDC) **Complementary feeding > 6 months:** Complementary foods are foods or drinks other than breast milk or infant formula (e.g., infant cereals, fruits, vegetables, water). (CDC)	Yes No

References

American Psychological Association. (n.d.). *Apa | Anxiety*. American Psychological Association. Retrieved September 7, 2022, from https://www.apa.org/topics/anxiety/

Anderson, P. M., Butcher, K. F., & Schanzenbach, D. W. (2019). Understanding recent trends in childhood obesity in the United States. Economics & Human Biology, 34, 16–25. https://doi.org/10.1016/j.ehb.2019.02.002

Aunola, K., Sorkkila, M., Tolvanen, A., Tassoul, A., Mikolajczak, M., & Roskam, I. (2021). Development and validation of the Brief Parental Burnout Scale (BPBS). *Psychological Assessment*, *33*(11), 1125–1137. https://doi.org/10.1037/pas0001064

Blakemore, E. (2021, May 3). *Race and ethnicity facts and information*. Culture. Retrieved September 6, 2022, from https://www.nationalgeographic.com/culture/article/race-ethnicity

Cachelin, F. M., & Thompson, D. (2013). Predictors of maternal child-feeding practices in an ethnically diverse sample and the relationship to child obesity. *Obesity*, *21*(8), 1676–1683. https://doi.org/10.1002/oby.20385

Centers for Disease Control and Prevention. (2021, December 3). *Defining childhood weight status*. Centers for Disease Control and Prevention. Retrieved August 26, 2022, from

https://www.cdc.gov/obesity/basics/childhood-defining.html

Centers for Disease Control and Prevention. (2021, May 24). *Obesity among young children enrolled in WIC*. Centers for Disease Control and Prevention. Retrieved September 10, 2022, from https://www.cdc.gov/obesity/data/obesity-among-WIC-enrolled-young-children.html

Centers for Disease Control and Prevention. (2022, April 4). *Pregnancy complications*. Centers for Disease Control and Prevention. Retrieved September 6, 2022, from https://www.cdc.gov/reproductivehealth/maternalinfanthealth/pregnancy-complications.html

Cheeks, L. H., Stepien, T. L., & Wald, D. M. (2016). Discovering News Frames: Exploring text, content, and concepts in online news sources to address water insecurity in the Southwest Region. *2016 IEEE 17th International Conference on Information Reuse and Integration (IRI)*. https://doi.org/10.1109/iri.2016.67

Coleta, H., Schincaglia, R. M., Gubert, M. B., & Pedroso, J. (2022). Factors associated with infant feeding styles in the Federal District, Brazil. *Appetite*, *179*, 106290. https://doi.org/10.1016/j.appet.2022.106290

Cooper-Vince, C. E., Arachy, H., Kakuhikire, B., Vořechovská, D., Mushavi, R. C., Baguma, C.,

McDonough, A. Q., Bangsberg, D. R., & Tsai, A. C. (2018). Water insecurity and gendered risk for depression in rural Uganda: A hotspot analysis. *BMC Public Health*, *18*(1), 1143. https://doi.org/10.1186/s12889-018-6043-z

de Oliveira, K. H. D., de Almeida, G. M., Gubert, M. B., Moura, A. S., Spaniol, A. M., Hernandez, D. C., Pérez‐Escamilla, R., & Buccini, G. (2020). Household food insecurity and early childhood development: Systematic review and meta‐analysis. *Maternal & Child Nutrition*, *16*(3), e12967. https://doi.org/10.1111/mcn.12967

Dembiński, Ł., Banaszkiewicz, A., Dereń, K., Pituch-Zdanowska, A., Jackowska, T., Walkowiak, J., & Mazur, A. (2021). Exploring physicians' perspectives on the introduction of complementary foods to infants and toddlers. *Nutrients*, *13*(10), 3559. https://doi.org/10.3390/nu13103559

Depression. (n.d.). National Institute of Mental Health (NIMH). Retrieved October 11, 2023, from https://www.nimh.nih.gov/health/topics/depression

Emerson, R. W. (2015). Convenience Sampling, Random Sampling, and Snowball Sampling: How Does Sampling Affect the Validity of Research? *Journal of Visual Impairment & Blindness*, *109*(2), 164–167.

Freeman, A. M., & Aggarwal, M. (2020). Malnutrition in the obese. *Journal of the American*

College of Cardiology, *76*(7), 841–843. https://doi.org/10.1016/j.jacc.2020.06.059

Generalized anxiety disorder assessment (GAD-7). CORC Child Outcomes Research Consortium. (n.d.). Retrieved September 6, 2022, from https://www.corc.uk.net/outcome-experience-measures/generalised-anxiety-disorder-assessment-gad-7/

Gross, R. S., Mendelsohn, A. L., Fierman, A. H., Hauser, N. R., & Messito, M. J. (2014). Maternal infant feeding behaviors and disparities in early child obesity. *Childhood Obesity*, *10*(2), 145–152. https://doi.org/10.1089/chi.2013.0140

Harbron, J., & Booley, S. (2013). Responsive feeding: establishing healthy eating behavior early on in life. *South African Journal of Clinical Nutrition*, *26*, 141–149.

Hawley, S. R., Beckman, H., & Bishop, T. (2006). Development of an obesity prevention and management program for children and adolescents in a rural setting. *Journal of Community Health Nursing*, *23*(2), 69–80. https://doi.org/10.1207/s15327655jchn2302_1

Heller, R. L., & Mobley, A. R. (2019). Instruments assessing parental responsive feeding in children ages birth to 5 years: A systematic review. *Appetite*, *138*, 23–51. https://doi.org/10.1016/j.appet.2019.03.006

Holley, C. E., & Haycraft, E. (2021). Mothers' perceptions of self-efficacy and satisfaction with

parenting are related to their use of controlling and positive food parenting practices. *Maternal & Child Nutrition*, *18*(1). https://doi.org/10.1111/mcn.13272

Hudak, K. M., & Benjamin-Neelon, S. E. (2021). Timing of WIC enrollment and responsive feeding among low-income women in the US. *International Journal of Environmental Research and Public Health*, *18*(14), 7695. https://doi.org/10.3390/ijerph18147695

The Hunger Vital Sign™. (n.d.). *Children's HealthWatch*. Retrieved November 16, 2023, from https://childrenshealthwatch.org/public-policy/hunger-vital-sign/

Ke, J., & Ford-Jones, E. L. (2015). Food insecurity and hunger: A review of the effects on children's health and behaviour. *Paediatrics & Child Health*, *20*(2), 89–91.

Kobylińska, M., Antosik, K., Decyk, A., & Kurowska, K. (2021). Malnutrition in obesity: Is it possible? *Obesity Facts*, *15*(1), 19–25. https://doi.org/10.1159/000519503

Kumar, S., & Kelly, A. S. (2017). Review of childhood obesity from Epidemiology, Etiology and Comorbidities to Clinical Assessment and Treatment. *Mayo Clinic Proceedings*, *92*(2), 251–265. https://doi.org/10.1016/j.mayocp.2016.09.017

Metallinos-Katsaras, E., Must, A., & Gorman, K. (2012). A Longitudinal Study of Food Insecurity on Obesity in Preschool Children. *Journal of the Academy of Nutrition and Dietetics*, *112*(12), 1949–1958. https://doi.org/10.1016/j.jand.2012.08.031

Miller, J. D., Workman, C. L., Panchang, S. V., Sneegas, G., Adams, E. A., Young, S. L., & Thompson, A. L. (2021). Water security and nutrition: Current knowledge and research opportunities. *Advances in Nutrition*, *12*(6), 2525–2539. https://doi.org/10.1093/advances/nmab075

Morales Camacho, W. J., Molina Díaz, J. M., Plata Ortiz, S., Plata Ortiz, J. E., Morales Camacho, M. A., & Calderón, B. P. (2019). Childhood obesity: Aetiology, comorbidities, and treatment. *Diabetes/Metabolism Research and Reviews*, *35*(8). https://doi.org/10.1002/dmrr.3203

Morandi, A., Tommasi, M., Soffiati, F., Destro, F., Fontana, L., Grando, F., Simonetti, G., Bucolo, C., Alberti, E., Baraldi, L., Chiriacò, A., Ferrarese, N., Frignani, G., Pasqualini, M., Rossi, V., Siciliano, C., Zuccolo, A. M., Matticchio, G., Vettori, V., … Maffeis, C. (2020). Correction: Prevention of obesity in Toddlers (probit): A randomised clinical trial of responsive feeding promotion from birth to 24 months. *International Journal of Obesity*, *44*(10), 2177–2177. https://doi.org/10.1038/s41366-020-00651-y

Nevada Division of Public and Behavioral Health . (2021). (rep.). *Annual Obesity Report 2020 State of Nevada Division of Public and Behavioral Health*. Retrieved September 9, 2022, from

https://www.leg.state.nv.us/Division/Research/Documents/RTTL_NRS439.521_2021.pdf

Ogden, C. L., Carroll, M. D., Fakhouri, T. H., Hales, C. M., Fryar, C. D., Li, X., & Freedman, D. S. (2018). Prevalence of obesity among youths by household income and education level of head of Household — United States 2011–2014. *MMWR. Morbidity and Mortality Weekly Report*, *67*(6), 186–189. https://doi.org/10.15585/mmwr.mm6706a3

Pérez-Escamilla, R., & Segura-Pérez, S. (2020). Can a pragmatic responsive feeding scale be developed and applied globally? *Maternal & Child Nutrition*, *16*(3). https://doi.org/10.1111/mcn.13004

Pérez-Escamilla, R., Segura-Pérez, S., & Hall Moran, V. (2019). Dietary guidelines for children under 2 years of age in the context of nurturing care. *Maternal & Child Nutrition*, *15*(3). https://doi.org/10.1111/mcn.12855

Perez-Escamilla, R., Bermudez, O., Buccini, G. S., Kumanyika, S., Lutter, C. K., Monsivais, P., & Victora, C. (2018). Nutrition disparities and the global burden of malnutrition. *BMJ*, *361*, k2252. https://doi.org/10.1136/bmj.k2252

Provincial Health Services Authority (n.d.). *Edinburgh Postnatal Depression Scale (EPDS)*. Perinatal Services BC. Retrieved September 6, 2022, from http://www.perinatalservicesbc.ca/health-professionals/professional-resources/health-pro

mo/edinburgh-postnatal-depression-scale-(epds)

Redsell, S. A., Slater, V., Rose, J., Olander, E. K., & Matvienko-Sikar, K. (2021). Barriers and enablers to caregivers' responsive feeding behaviour: A systematic review to inform childhood obesity prevention. *Obesity Reviews*, *22*(7). https://doi.org/10.1111/obr.13228

Sandow, A., Tice, M., Pérez-Escamilla, R., Aryeetey, R., & Hromi-Fiedler, A. (2020). Facilitators of responsive feeding/parenting knowledge and practices among parents in the Central Region of Ghana. *Current Developments in Nutrition*, *4*(Supplement_2), 1069–1069. https://doi.org/10.1093/cdn/nzaa054_141

Sanyaolu, A., Okorie, C., Qi, X., Locke, J., & Rehman, S. (2019). Childhood and adolescent obesity in the United States: A public health concern. *Global Pediatric Health*, *6*. https://doi.org/10.1177/2333794x19891305

Shaya, F. T., Flores, D., Gbarayor, C. M., & Wang, J. (2008). School-based obesity interventions: A literature review. *Journal of School Health*, *78*(4), 189–196. https://doi.org/10.1111/j.1746-1561.2008.00285.x

Skouteris, H., Bergmeier, H. J., Berns, S. D., Betancourt, J., Boynton-Jarrett, R., Davis, M. B., Gibbons, K., Pérez‐Escamilla, R., & Story, M. (2020). Reframing the early childhood obesity prevention narrative through an equitable nurturing approach. *Maternal & Child*

Nutrition, *17*(1). https://doi.org/10.1111/mcn.13094

Sommers, B. D., Blendon, R. J., & Orav, E. J. (2016). Both the 'private option' and traditional Medicaid expansions improved access to care for low-income adults. *Health Affairs*, *35*(1), 96–105. https://doi.org/10.1377/hlthaff.2015.0917

Southern Nevada Community Health Assessment Report 2020/2021. Southern Nevada :: Resource Library :: Southern Nevada Community Health Assessment Report 2020/2021. (2022). Retrieved September 9, 2022, from https://www.healthysouthernnevada.org/resourcelibrary/index/view?id=240149639255240251

Southern Nevada Health District. (2022, February 15). *Vital Records statistics*. Southern Nevada Health District. Retrieved September 9, 2022, from https://www.southernnevadahealthdistrict.org/news-info/statistics-surveillance-reports/vital-records-statistics/

Srivastava, D., Zheng, L. R., & Dev, D. A. (2022). Examining correlates of feeding practices among parents of preschoolers. *Nutrition and Health*, *28*(4), 555–562. https://doi.org/10.1177/02601060211032886

Stingone, J. A., & Claudio, L. (2008). Disparities in allergy testing and health outcomes among

urban children with asthma. *Journal of Allergy and Clinical Immunology*, *122*(4), 748–753. https://doi.org/10.1016/j.jaci.2008.08.001

Strauss, W. J., Nagaraja, J., Landgraf, A. J., Arteaga, S. S., Fawcett, S. B., Ritchie, L. D., John, L. V., Gregoriou, M., Frongillo, E. A., Loria, C. M., Weber, S. A., Collie-Akers, V. L., McIver, K. L., Schultz, J., Sagatov, R. D., Leifer, E. S., Webb, K., & Pate, R. R. (2018). The longitudinal relationship between community programmes and policies to prevent childhood obesity and BMI in children: The Healthy Communities Study. *Pediatric Obesity*, *13*, 82–92. https://doi.org/10.1111/ijpo.12266

Taher, S., Muramatsu, N., Odoms-Young, A., Peacock, N., Michael, C. F., & Courtney, K. S. (2022). An embedded multiple case study: Using CFIR to map clinical food security screening constructs for the development of Primary Care Practice Guidelines. BMC Public Health, 22(1). https://doi.org/10.1186/s12889-021-12407-y

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. https://doi.org/10.1016/j.appet.2009.06.010

Vassilakou, T. (2021). Childhood malnutrition: Time for action. *Children*, *8*(2), 103. https://doi.org/10.3390/children8020103

Volger, S., Rigassio Radler, D., & Rothpletz-Puglia, P. (2019). Correction: Early childhood obesity prevention efforts through a life course health development perspective: A scoping review. *PLOS ONE*, *14*(1). https://doi.org/10.1371/journal.pone.0211288

Weihrauch-Blüher, S., & Wiegand, S. (2018). Risk factors and implications of childhood obesity. *Current Obesity Reports*, *7*(4), 254–259. https://doi.org/10.1007/s13679-018-0320-0

Williams, A. S., Ge, B., Petroski, G., Kruse, R. L., McElroy, J. A., & Koopman, R. J. (2018). Socioeconomic status and other factors associated with childhood obesity. *The Journal of the American Board of Family Medicine*, *31*(4), 514–521. https://doi.org/10.3122/jabfm.2018.04.170261

Curriculum Vitae

AMANDA K. CASTELO SARAGOSA

Graduate Research Assistant
amanda.saragosa@gmail.com | Las Vegas, NV

Summary

I am a highly driven and passionate student and researcher who is passionate about helping individuals lead healthier and happier lives. With an aspiration to become a Pediatric Doctor, I have immersed myself in the field of Public Health to understand health beyond biology and genetics. My interests include Maternal-Child Health and Nutrition, Responsive Feeding, Childhood Obesity, Chronic Diseases, Breastfeeding, and Early Childhood Development.

Education

The University of Nevada, Las Vegas — Las Vegas, Nevada
Master of Public Health (MPH) in Social and Behavioral Health — *January 2021 - December 2023*

Chaminade University of Honolulu — Honolulu, Hawaii
Bachelor of Science (BS) in Cellular and Molecular Biology — *May 2015 - May 2019*

Work Experience

UNLV School of Public Health — Las Vegas, Nevada
Graduate Research Assistant — *2022 - Present*

- Conduct literature reviews
- Support the development of data collection tools
- Support the general organization of research documents
- Preparation and submission to IRB
- Writing abstracts, reports, and pubs.

CVS Pharmacy, LLC — Honolulu, HI; Las Vegas, NV
Certified Pharmacy Technician (CPhT) | Las Vegas, NV — *2019 - 2022*

- Assumes the responsibilities of a pharmacy technician
- Administration of Vaccinations (COVID, Flu, Shingles, MMR, Gardasil, Pneumonia, Hepatitis, Tdap)

Pharmacy Lead Technician | Honolulu, HI — *2019 - 2021*

- Assumes the responsibilities of a pharmacy technician and inventory specialist, in addition;
- Coordinates technician schedules
- Conduct interviews
- Monitor technicians performances
- Perform additional responsibilities under the pharmacy manager

Pharmacy Inventory Specialist | Honolulu, HI *2018- 2019*

- Assumes the responsibilities of a pharmacy technician, in addition;
- Coordinating and monitoring the inventory of medications and other pharmacy supplies
- Ordering and checking in shipments
- Managing balance on hand, medication counts, and dropped medications

Pharmacy Technician | Honolulu, HI *2016 - 2018*

- Preparing and organizing medications for pharmacists by taking in prescriptions, calculating quantities, assembling medications, and preparing labels.
- Additionally, calling insurance and doctors' offices and providing exceptional customer service.

Courses and Certifications

CITI Certificate | CITI Program *2022- Present*

Pharmacy-Based Immunization Administration Certified *2021-Present*

Pharmaceutical Technician License | Nevada State Board of Pharmacy *2021-Present*

Certified Pharmacy Technician (CPhT) | Pharmacy Technician Certification Board *2019-Present*

Select Awards and Honors

Elected Member *2023*
The University of Nevada, Las Vegas chapter of The Honor Society of Phi Kappa Phi

HRSA Scholarship Awardee *2023*

Research Experience

Manuscripts in Preparation

"Using Concept Mapping to Co-Create Implementation Strategies to Address Food Insecurity During the First 1,000 Days" **Amanda Castelo Saragosa,** Jason D. Flatt, Ph.D., MPH, Gabriela Buccini, Ph.D., MSc, IBCLC

"Cross-Sectional Study to Analyze the Factors Associated with Caregiver Responsive and Non-Responsive Feeding Styles in Clark County, Nevada" **Amanda Castelo Saragosa,** Gabriela Buccini, Ph.D., MSc, IBCLC, Christopher Johansen, Ph.D., MPH

Presentations

Southern Nevada Breastfeeding Coalition Symposium November 2023
American Public Health Association Conference 2023 November 2023

Skills

Research: Organizing, Program Planning, Data Analyzing, Writing, and Intervention Implementation and Evaluation Strategies

Technology: Microsoft Office (Excel, Word, PowerPoint), STATA, Qualtrics, Canva