Article

Considering How the Caregiver-Child Dyad Informs the Promotion of Healthy Eating Patterns in Children

Clinical Pediatrics
1–12

DOI: 10.1177/00099228241304468
journals.sagepub.com/home/cpj
Sage

Abigail Nita, BS[1,*], Robin Ortiz, MD, MSHP[1,2,3,*], Sabrina Chen, MD[4], Vanessa E. Chicas, MS[5], Antoinette Schoenthaler, EdD[3], Paulo Pina, MD, MPH[1], Rachel S. Gross, MD, MS[1,2], and Carol Duh-Leong, MD, MPP[1]

Abstract

Although it is known that caregiver dietary behaviors influence child eating patterns, a gap remains in addressing the diet of a caregiver as much as their child in pediatric practice. A dyadic (caregiver-child) dietary approach would enhance the promotion of healthy eating patterns in children (and their caregivers) and achieve the population health goal of healthy eating across demographic groups. This study aimed to understand factors influencing dyadic dietary patterns (concordance, discordance) and contexts. Twenty professionals who provide nutrition-related expertise for families were recruited via maximum variation sampling. Qualitative thematic analysis of semi-structured interviews revealed 3 themes: (1) variable professional perspectives on what constitutes "healthy eating," (2) eating patterns of a child in the setting of variable caregiver eating practices, and (3) challenges to the promotion of a healthy caregiver-child dyadic diet within a social context. The results offer insight for future interventions that promote positive intergenerational transmission of health.

Keywords

nutrition, family health, dyad, healthy eating, social determinants of health

Introduction

The American Heart Association (AHA) recently published a strategic plan to improve population-wide cardiovascular health (CVH), which has been shown to mitigate the top causes of morbidity and mortality in the United States.[1,2] Most noteworthy in this framework is the emphasis on the need for an intergenerational and life course approach to population health.[2] In the United States, 91% of children age 5 to 19 years old do not meet the AHA's CVH metric for healthy dietary standards, with less than 1% meeting adequate vegetable intake.[3,4] This is a particular cause for concern, known best by the field of pediatrics, as habits that influence a lifetime of health originate in childhood.[4] A recent study demonstrates the risk this poses, showing that one's CVH score (largely defined by lifestyle factors, inclusive of a vegetable-based, whole foods diet), at age 8, predicts CVH across the life course.[5] Given the bidirectional influence between the health of a child and the health of their caregiver, children and adult caregivers (the dyad) taken together, must work toward attaining a healthy lifestyle and meeting nationally recommended dietary guidelines.[6-8] Accordingly, there is a call for policies to address a dyadic approach to population health.[9] This may pose an opportunity for pediatricians to consider novel methods to address adult caregiver health and eating patterns, or diet, as a means to support the life course CVH trajectories of their pediatric patients.

Professionals who provide nutrition-related expertise with the aim to close the gap between poor dietary

[1]Department of Pediatrics, NYU Grossman School of Medicine, NYU Langone Health, New York, NY, USA
[2]Department of Population Health, NYU Grossman School of Medicine, NYU Langone Health, New York, NY, USA
[3]Institute for Excellence in Health Equity, NYU Langone Health, New York, NY, USA
[4]UCSF Department of Internal Medicine, University of California San Francisco, San Francisco, CA, USA
[5]The Alan and Marlene Norton College of Medicine, SUNY Upstate Medical University, Syracuse, NY, USA

*Co-first author, these authors contributed equally.

Paulo Pina is now affiliated to Department of Pediatrics, Warren Alpert Medical School of Brown University, Hasbro Children's Hospital, Providence, RI, USA.

Corresponding Author:
Robin Ortiz, Department of Pediatrics, NYU Grossman School of Medicine, NYU Langone Health, 550 First Avenue, New York, NY 10016, USA.
Email: robin.ortiz@nyulangone.org

goal achievement and population health often approach dietary counseling and the promotion of healthy behaviors by engaging the family.[10] The core familial influence for a child is their caregiver (biological, adoptive, foster, relative, kinship, or other), and therefore, the American Academy of Pediatrics and the AHA corroborate the importance of their engagement in pediatric practice.[11-13] Evidence supports that caregivers serve as models of food intake, feeding styles, and socialization habits for their children.[14-16] For example, parental modeling and fruit and vegetable intake, as well as family rules around food, are associated with a child's consumption of fruits and vegetables.[17] Still, it remains to be elucidated whether this relationship influences the approach to promoting healthy lifestyles taken by child care and health care professionals who work in the context of families (eg, with children directly and/or with adults who are caregivers of children), such as primary care clinicians, nutritionists, day care leaders, and others. Given that these professionals are typically trained to focus on only one of the individuals within a dyad (the child or the adult caregiver), a first step to addressing this knowledge gap is to understand how different professionals conceptualize the caregiver and child diet taken together (the dyadic diet).

Effective dietary change intervention must consider socioecological contexts and address needs such as food insecurity or unstable employment.[18,19] It is also important to recognize structural and cultural factors that surround a dyad, as they relate to their lifestyle behaviors.[20] For example, racial, ethnic, and poverty-related disparities affect dietary choices and behaviors from as early as toddlerhood.[21] Importantly, inequities in child care access, early childhood education, or differential cultural approaches to caregiving for a child add complexity to the caregiver-child nutritional environment.[22,23] Further research is needed to identify how professionals manage these contexts when addressing the dyadic diet.

Professionals from diverse child care and health care-related fields, who work with a caregiver and child individually or as a unit, may have something to offer on how to approach a dyad, especially from a clinical pediatric standpoint. Therefore, this hypothesis-generating study aimed to explore professionals' (1) practice-based perspectives of how caregiver and child dietary patterns compare to one another and (2) experiences of promoting healthy dyadic diets amid socioeconomic factors or the social determinants of health, referring to material hardships (eg, income, food insecurity, perceived stress), and psychosocial factors (eg, social support, family relationships, culture/community).[24] Specifically, this study harnesses a qualitative thematic analytic approach to identify and gain an in-depth understanding of potential contributors to dyadic diets that could serve as intervention targets to prevent the intergenerational transmission of poor CVH.

Methods

We performed a qualitative study of child care and health care professionals (participants) who promote caregiver or child nutrition in families with economic disadvantage in the greater New York City area. The study design consisted of semi-structured interviews, an iterative coding process, and a thematic analysis to gain insight into the study question that is grounded in various professionals' perspectives and experiences. Further details on the qualitative methodology can be found in Supplemental Table 1.

Sampling and Recruitment

Inclusion criteria included professionals who either work directly with children or support adult caregivers of children; trained with a background in nutrition promotion; English-speaking; and employed by NYU Langone Health or an NYU Langone Health-affiliated program. Recruitment occurred through study investigator professional networks, participant word-of-mouth, and listserv recruitment. Informed consent was conducted with all participants, and this study was ethically reviewed and considered exempt by the Institutional Review Board at the NYU Grossman School of Medicine.

Interview Process

The interview guide was designed, pilot-tested, and iteratively revised by an interdisciplinary team of practicing pediatricians, and lifestyle wellness, public health, and maternal-child specialists. The interview guide included descriptive questions related to understanding each individual's work, systemically queried for experiences on counseling concordant and discordant dyadic diets (diets similar and different between caregivers and children, respectively), and applied a socioecological model to ask about contexts or obstacles surrounding caregiver and family dietary choices (such as culture, socioeconomic status, parenting/caregiving style, and resource allocation). Three trained interviewers (AN, RO, VC) conducted interviews between 28 and 57 minutes long (with an average of 43 minutes) from July 2022 to April 2023.

Codebook and Analysis Plan

We used descriptive statistics (count, mean, standard deviation, percentages) to summarize the study sample. Audio recordings of the interviews were uploaded to a

professional service to be transcribed verbatim.[25] A mixed deductive and inductive approach informed the coding process (Supplemental Table 1). Two study researchers (AN, SC) performed a thematic analysis to identify and iteratively refine codes from the interview, ensuring continued recruitment of subjects until thematic saturation was reached. Using textual analyses, all study team members independently read full transcripts and convened weekly to share broad themes, discuss major findings, and abstract codes up to themes. This full study team refined the codebook until a final code structure was derived, and independent coders (AN, SC) reached an agreement of >80%. Dedoose (Version 8.3.35) was used to finalize coding and retrieve and analyze representative quotations within each code together.[26]

Results

The study sample (Table 1) included 20 participants working in diverse professions at medical clinical sites (dieticians, pediatricians, nurse practitioners), medical-community collaborative sites (child care program directors and leaders), and community programs (WIC director, community health worker). Participants also worked in or were affiliated with different community settings (often multiple settings), including academic hospital environments, a public hospital system, family practice locations, and an academic medical center (NYU Langone Health)-affiliated child care centers. Their professions and specializations offered perspectives on the dyad from numerous fields and sources of expertise including pediatric health care (adolescent, subspeciality, and general pediatrics), adult and intergenerational health care (family, medicine, and obstetric care), child development and education, and programmatic support (social, relational, and economic). In line with pediatric professionals' demographics, most participants were female (90%).[27]

Three main themes were identified when determining the relationship and influencing contexts of a child and their caregiver's eating patterns. Although variability existed between the participant's experiences, these themes represented their shared common ideas and exposures. The themes are defined by codes and additional representative quotations in Supplemental 2 and can be summarized in Figure 1.

THEME 1: Variable Professional Perspectives on What Constitutes "Healthy Eating"

Participants were prompted to define both a healthy and unhealthy diet at the beginning of each interview.

As participants spoke of their experiences working with nutritional advising, a few described that the criteria for defining a "healthy diet" are constantly evolving. Despite the changes, however, they emphasized that "healthy" does not have to be so complex:

> Through the years, nutrition has changed a lot . . . the dietary guidelines . . . in ways of presenting what is healthy . . . we started describing food groups . . . Later, they moved to the Food Guide Pyramid, later to the dietary guidelines . . . and [it keeps] changing . . . but healthy for other people maybe something simpler. Good to eat. (WIC Coordinator)

In addition, participants described that the foods the patients and dyads they work with consider healthy can often differ from their practice-based perspectives with differences in opinion suggested to result from a lack of nutrition education, low literacy levels, and cultural differences:

> [A family's] idea of healthy eating can sometimes be different from how like medical professionals and I see it . . . they will say, "Oh, they (the child) eat overall very healthy," but when we review their diet better and look at their growth chart, we see that they're more overweight and even in the obese category . . . (Pediatrician)

Although some participants discussed a healthy child's diet as one that fosters growth and development, or healthy practices around meals, the majority agreed that a diverse, balanced meal of greens, whole grains, fresh and vitamin-rich foods, and limited sugar and juice is what they teach as "healthy." A pediatrician described, "A healthy diet is a varied diet . . . a combination of all of the food groups, so some dairy, some carbohydrates, some proteins, some [fruits] and vegetables . . . as few processed foods as possible."

THEME 2: Eating Patterns of a Child in the Setting of Variable Caregiver Eating Practices

Participants discussed several dyadic dietary eating patterns. These included experiences with caregivers and children having both similar and different eating styles, coded as *concordant* and *discordant dyadic diets*, respectively (see Figures 1 and 2).

Concordant Dyadic Diet

Participants discussed how a caregiver acts as a strong influence over a child, especially in what, when, and how much food they are consuming. As a result, they stressed

Table 1. Sample Characteristics.

Sample characteristic		n (%)
Professional place of practice and identifiers	Primary health care setting	15 (75%)
	Pediatricians (Practice sites: public hospitals, federally qualified health centers, academic medical centers)	7 (35%)
	Nurse practitioners	2 (10%)
	Dietician	2 (10%)
	Nutritionist	2 (10%)
	Early parenting specialist	1 (5%)
	Internist	1 (5%)
	Community setting	5 (25%)
	Child care program leaders and directors	3 (15%)
	WIC coordinator	1 (5%)
	Community health worker	1 (5%)
Average amount of time working with current organization	Time ranged from 4 months to 21 years	9.10 years
Average age	Ages ranged from 28 to 60+ years	40 years
Gender	Female	18 (90%)
	Male	2 (10%)
Working languages	English	20 (100%)
	Spanish	10 (50%)
	Cantonese	2 (10%)
	Mandarin	2 (10%)
	Gujarati	2 (10%)
	Hindi	1 (5%)
	Korean	1 (5%)
	Jamaican Patois	1 (5%)
Birth country	The United States	13 (65%)
	Columbia	1 (5%)
	Taiwan	1 (5%)
	Guatemala	1 (5%)
	South Korea	1 (5%)
	Trinidad and Tobago	1 (5%)
	Peru	1 (5%)
	Other	1 (5%)
Race	African American/black	2 (10%)
	Asian/Pacific Islander	6 (30%)
	White	8 (40%)
	Other	4 (20%)
Ethnicity	Hispanic or Latino	4 (20%)
	Not Hispanic or Latino	15 (75%)
	Other	1 (5%)

the importance of the caregiving role in creating a concordant dyadic diet. These participants described examples of a caregiver's influence as gatekeeping (eg, being responsible for grocery shopping and cooking), role modeling eating habits and behaviors, and acting as an authoritative figure. Children frequently want what their caregivers have and will mimic their eating and drinking habits:

> [C]hildren learn to eat what their parents are eating. A lot of parents feed their kids whatever they are eating. And if you feed your kid healthy stuff and you're not eating healthy stuff, your child is not going to want to eat their healthy stuff either because they want to eat what you're—their parents are eating. (Family Nurse Practitioner)

According to participants, this behavior modeling is supported by shared family meals and similar eating schedules. When a child eats with their family, other caregivers, or at day care, they are constantly observing what those around them are consuming. Participants

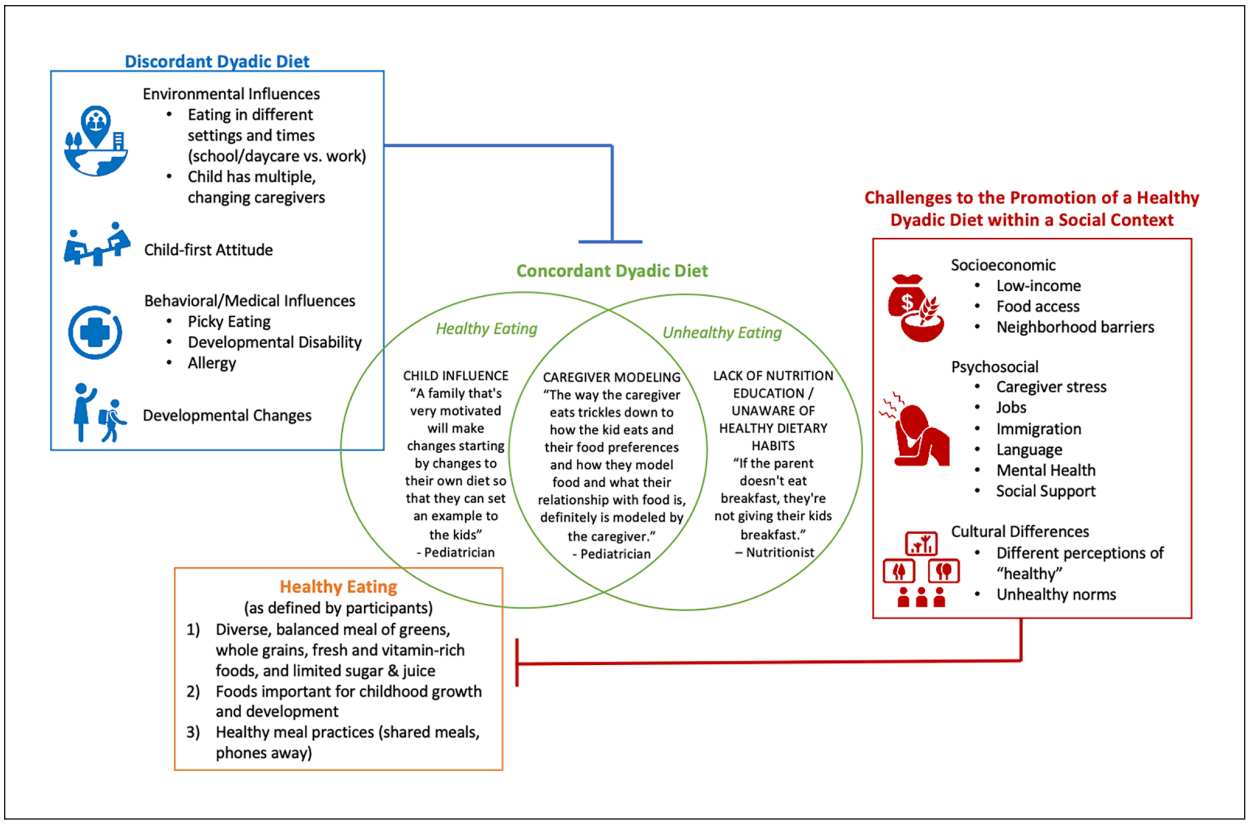

Figure 1. Defining the construct of the dyadic diet and its context. The approach participants took to defining healthy eating comprised multiple factors (as described in the orange box). This corresponds to information conveyed in theme 1 of the study results. Participants also defined the eating patterns of a child in the setting of variable caregiver eating practices (theme 2), which included concordant and discordant dyadic diet patterns (both captured in the green Venn diagram, with quoted examples for reference). Notably, participants described concordance to occur when a caregiver and their child's eating habits followed healthy or unhealthy dietary patterns. This was often discussed to be influenced by caregiver modeling of eating behaviors. Discordance (caregiver and child with different, unmatched dietary patterns) was influenced by environmental factors, caregiver perspectives on prioritization of the child's health, and child-specific factors (behavioral, health, and/or developmental). Participants agreed on several factors that prevented dyads from attaining healthy eating (regardless of its definition). These were often discussed as relevant to preventing healthy eating for both caregivers and children (eg, concordance of the dyadic diet). Such factors are noted as challenges (defined in the red box) and correspond to theme 3 of the study results.

alluded to observing a child's behavior in wanting the food off an adult's plate, even if the food was the same as theirs, and children are "cooking" in a play kitchen.

Healthy concordant. A concordant dyadic diet can be both positive (healthy) or negative (unhealthy). Several participants linked a dyad having healthy concordant eating patterns to the power of family behavior change and familial beliefs. In the setting of poor health outcomes (eg, obesity, growth curves), participants described that they see motivated, healthy caretakers generally promote and foster similar healthy ideals in their children. In addition, parents or caregivers may work to change their own unhealthy habits, both in food consumption and lifestyle, to better support their children. This was explained by a pediatrician as,

> because the parent is so motivated, [they have] a really good understanding of what it means to have like a healthy diet . . . it's just really inspirational to see . . . how many parents make like active changes in their lifestyle to benefit their family.

Unhealthy concordant. Participants suggested that unhealthy concordance can occur through the same dyadic constructs as healthy concordance. A dietician mentioned, "if the parent is not eating fruits and vegetables, they're not making them and then the child's not getting them." Other examples

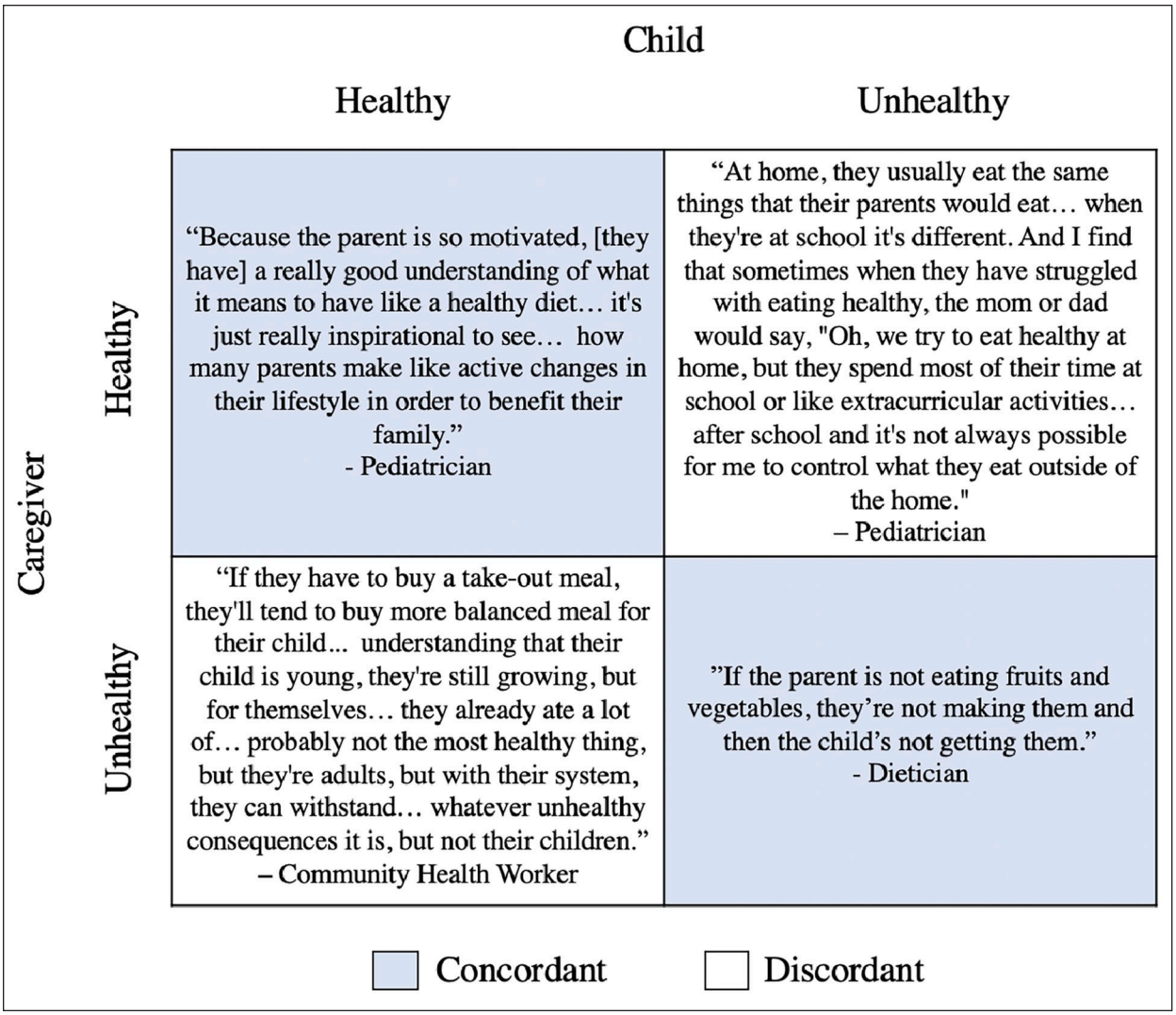

Figure 2. Visual matrix with representative quotations of a concordant and discordant dyadic diet. Examples of how participants defined the eating patterns of a child in the setting of variable caregiver eating practices (Theme 2). This includes descriptions of concordant and discordant dyadic diets, including interpretations of contributing factors that contribute to each eating pattern. The quotations in the figure represent healthy and unhealthy concordant dyadic diets (blue boxes), and discordant healthy diets where 1 individual in the dyad eats healthy and the other eats unhealthy (white boxes).

of unhealthy concordance participants discussed include: if a caregiver does not understand or have healthy eating habits for themselves, eg, if a caretaker skips breakfast, day care leaders noted that the child would typically not be given breakfast either.

Discordant Dyadic Diet

Participants alluded that this discordance between the diet of a caregiver and child can result from several structural environmental factors. For example, a family eating in different settings or at different times leads to the consumption of different foods. As school and work schedules do not always align, food sources, meal times, and snacking patterns will differ between children and their caregivers:

> [When parents are] working . . . teenagers at home after school . . . [are] making their own choices . . . [some]cook a little bit on their own . . . but . . . definitely more processed things . . . very different from like more home-cooked meals that their parents would prepare. (Pediatrician)

Children having multiple, changing caregivers were suggested as another reason for discordant diets. In these

instances, a caregiver may have less control over and limited knowledge of what the child eats daily:

> When it comes to grandparents being the caregiver, the food that they prepare for the grandchildren are not necessarily the healthiest . . . [quick processed items] or things that they feel like, their grandchild [needs], more meat, high in fat to help them grow stronger and bigger particular if grandchild is a boy. So how grandparents prepare a meal is different from how a parent might prepare a meal. (Community Health Worker)

Healthy child—unhealthy caregiver. Multiple participants discussed instances of children eating healthier than their caregivers, especially when caregivers put their children first, as an early parenting specialist described, "Just like being parents, like, we all want the best for our kids, you know? But sometimes we're—we're not necessarily doing the same or like putting the same standards in ourselves." According to participants, a "best for our kids" attitude may be seen in families allocating funds to ensure the child has a healthy diet; caregivers understanding what is healthy for a child, but not following the same standards for oneself; and in instances of parental stress or depression, where a caregiver puts effort and energy into the child but not oneself.

Healthy caregiver—unhealthy child. Circumstances of healthy caregivers with unhealthy children were described in children with a medical condition such as autism with fixations on certain foods, "picky eating," or specific limiting food allergies.

Discordant eating: other. Several participants indicated that the developmental stage (which may or may not correspond with a child's chronological age) may impact dyadic dietary patterns. Specifically, multiple practitioners referenced that as a child gets older, their dietary habits can shift away from the concordance that is typical among young children or adolescents and their caregivers. This can be a result of increased independence (eg, the ability to go out and buy their own food, make decisions about dietary preferences, and have less caregiver regulation), as well as peer influence. A pediatrician described this transition as:

> At a year when they start eating table foods . . . you'll hear . . . they eat everything or whatever like the family's eating. So that's the time where I'd see the most concordance and then . . . as they're teenagers and have more autonomy . . . freedom and access outside of the home for other foods. That's when I start to . . . see the discordance.

THEME 3: Challenges to the Promotion of a Healthy Caregiver-Child Dyadic Diet Within a Social Context

Three overarching types of challenges were thoroughly discussed by participants when asked about the obstacles to meet healthy eating guidelines that a caregiver-child dyad faces: socioeconomic, psychosocial, and cultural.

Socioeconomic Factors and Social Determinants of Health

Participants explained that healthy food often costs more than processed or unhealthy foods and may not be as tasty or filling. If a caregiver-child dyad suffers from low-income or food insecurity, extra strides may be made within the family to make ends meet and, consequently, less focus may be placed on healthy eating. A pediatrician elaborated, describing barriers:

> Seeing lower-income families . . . where either they have financial strains and food insecurity or . . . [children] have more . . . quick . . . and convenience foods . . . and not that much time to . . . have meals together and have more wholesome home-cooked foods.

Participants discussed how those living in lower-income neighborhoods, especially in certain regions of boroughs in the New York City area, typically do not have fresh, whole foods regularly available (from farmers markets, fresh produce stands, healthy grocery stores), but instead a plethora of fast and processed food options. Traveling to attain healthier food may not exist on one's commute home from work, and as many city families do not own cars and the limits on working caregivers' time, fresh food may not be accessible:

> We call it fast food lane because every single fast-food restaurant just about you could think of at least was . . . on the strip . . . Burger King, McDonald's, [etc.] . . .if you want more healthy foods, even if you say you're not gonna cook and you want to buy something out, you have to travel. (Child Care Program Leader)

In addition, a reliance on food stamps or federally funded food programming does not always facilitate healthy eating practices. One pediatrician described counseling a parent of a 2-year-old child with iron deficiency due to significant milk intake. This deficiency was seemingly inevitable as the parent told this

physician, "I'm not buying milk, I'm in WIC and they only give us milk." Another participant identified:

> One of the things that killed me even in a government-run program is they were giving juice to the parents for the young kids . . . for what reasons? . . . A cup every meal . . . So maybe they were getting six or eight servings of fruit but in liquid form. So there was a lot of obesity. (Pediatric Nutritionist)

Psychosocial Factors

Many participants also brought up psychosocial barriers as deterrents to healthy dyadic eating such as caregiver stress from working several jobs, immigration status, language barriers, mental health, and lack of social support.

Working parents face challenges when considering what and how to feed their children. During periods of higher stress, health care and day care professionals alike mentioned seeing increased trends in unhealthier, convenience food consumption. However, this does not necessarily mean the parent does not consider their child's health. Competing circumstances can lead to thoughts of:

> Where is this kid going to eat? Who's going to feed them?. . . Sometimes someone else ends [up] making those decisions although you want them . . . That's a . . . difficult situation for working parents to retain . . . their desire of the feeding choices for their kids when they are not present. (WIC Coordinator)

Immigration also introduces several challenges and stressors to dyads and families, as language, finances, employment, and literacy levels can hinder healthy eating habits. An early parenting specialist specifically discussed how low literacy contributes to a lack of nutrition label understanding, which may lead caregivers to make unhealthy choices despite their best intentions to select healthy foods.

Challenges in a caregiver's relationships may also impact the dyad's diet. A dietician provided an example of this when speaking about a family going through a divorce, mentioning that:

> the usual snacks that were fruit and veggies, they were out the window . . . now I would hear about cookies, whatever the child wanted. [The] child didn't wanna change diapers. But if you would give her a cookie, she would change diapers.

A culmination of these stressors, feelings of depression or poor mental health, or lack of social support can also contribute to unhealthy practices. This was described by a pediatrician as:

> If somebody is . . . really bogged down by all the things they're dealing with, and they have a lot of stressors, maybe they're kind of depressed . . . the motivation to want to have . . . healthier practices and healthier diet . . . may be just hard for that to be a priority at that given point in their lives.

Cultural Factors

Participants stressed the importance of recognizing and supporting cultural customs around food, with 1 pediatrician noting that "food is very central to . . . how people love their families, take care of them . . . food is very important," especially to those of varying racial and ethnic identities. However, the participants also recognized that the diversity or inconsistencies of various diets do not always align with their definitions of healthy eating. Participants discussed several factors associated with varied cultural food norms that pose a challenge when promoting healthy eating for a dyad. For example, several professionals described that in Asian cuisine, Kimchee and Chinese pickles are typical meal components, but very high in sodium. In Hispanic culture, many meals are eaten with tortillas, which are high in carbohydrates. White and yellow rice are also common in various cultures, but they are both unhealthier carbohydrate options to brown rice. Although important to sustaining one's culture, when a child is brought up consuming these unhealthier options frequently, participants explained that there can be consequences long-term.

Appearance and body image or customs such as clearing ones' plate are other cultural factors that play a role in dietary practices. For example, being overweight may not be considered unhealthy for those in varying cultures:

> The parent sometimes not thinking that the child may have a problem with overweight or obesity and it's like okay so my child is okay or maybe cultural perception that okay, so a little extra weight is just healthier for us (the patient's family) as a Hispanic culture. So, I (the patient's parent) don't perceive that as unhealthy. (Early Parenting Specialist)

Discussion

Through interviews with 20 child care and health care professionals, we found 3 main themes on the concept of the dyadic diet: variable professional perspectives on what constitutes "healthy eating," eating patterns of a child in the setting of variable caregiver eating practices, and challenges to the promotion of a healthy

caregiver-child dyadic diet within a social context. This study was unique in the approach of gathering perspectives of professionals with expertise in different fields, including pediatricians, nurse practitioners, nutritionists, child care program leaders and directors, an early parenting specialist, an internist, a community health worker, and a WIC coordinator. The findings are distinct in elucidating the concept of dyadic diet concordance between a caregiver and their child and may inform pediatric and caregiver-focus professional's strategies for working with a dyad to meet healthy dietary guidelines.

As a means of supporting the healthy dietary goals of children, pediatric clinicians must consider the health of the dyad, particularly their nutritional health. A "healthy dyadic diet," was defined by participants in the current study as both a caregiver and child consuming a diverse, balanced diet of primarily whole, nonprocessed foods. However, our study elucidated how this goal may be challenged by competing priorities of the caregiver and child; circumstances causing discordant dyadic diets; and socioeconomic status, psychosocial factors, and cultural influences. The identification of these obstacles offers insight for the field of clinical pediatrics. It is imperative for future studies to trial interventions that harness a multidisciplinary approach to address the barriers to healthy dyadic eating patterns identified in the current study. As a first step, our study offers insight into the concept of dyadic diets and challenges to their attainment.

Although a caregiver is typically the driver and model of eating patterns, some professionals indicated that a child can also foster familial behavior change toward concordant healthy eating. The literature corroborates that the concept of healthy concordance is bidirectional between a caregiver and child.[28] However, dyadic concordance is commonly associated with caregiver modeling, as a caregiver's authoritative role, consciously or subconsciously, influences a child.[9,29,30]

Challenges exist for professionals when promoting concordant healthy eating. First, varying interpretations of "healthy" exist for professionals. The approach to defining a healthy diet was informed by concepts such as food diversity and balance, contributions to growth and development, and meal practices (eg, shared meals). Varying definitions and inconsistent practice guidelines may explain why participants in previous studies had difficulty meeting their dietary goals.[31,32] Furthermore, participants described how dyads from different ethnic and racial backgrounds held different views on what is "healthy." For example, food can be historically traditional to an identity or belief system, and different cultural influences provide varying opinions on how one's body should appear.[33,34] Second, many participants identified that elements of discordant diets impeded the ability for caregiver modeling to occur (Figure 1). Temporal and structural environmental influences, eg, mitigate a caregiver's ability to build a connection that enables concordance. Specifically, caregivers and children eating in different settings or at different times (due to jobs or school) prevent shared meals where children can observe caregiver practices. In addition, participants alluded to their experiences where a child may have several different caregivers at times, which can lead to inconsistency in healthy practices, as only some caregivers may enforce or model the same habits. Professionals corroborated that healthy modeling was specifically challenging for dyads who are low-income or live in low-socioeconomic neighborhoods where healthy foods are less accessible, consistent with prior literature.[35,36] Caregivers facing various stressors (e., jobs, immigration status, language barriers, mental health, or lack of social support) may focus less on healthy eating, hindering a dyad's attempts to attain healthy concordance. Although structural and temporal variations in caregiving structure are important to support caregiver needs and challenges, understanding these concepts may assist in developing future interventions to better support caregiving in all settings and promote healthy concordance.

Some previous studies recognize the importance of healthy dietary concordance, including those where professionals attempted to address the dyadic diet in familial interventions. For example, 1 study found that extending a family's typical meal time by 50% (an average of 10 more minutes) led to parents and children consuming greater amounts of fruits, vegetables, and water.[37] However, social contexts such as the potential that caregivers may be constrained to specific schedules due to work or other primary responsibilities, this may not be a feasible suggestion for families in practice. Therefore, other practice suggestions may be considered such as attempting a general decrease in frequency of eating out. For example, a 2-year, low-income, family health promotion program that offered fresh produce, nutrition education, and recipe tastings, led to parent and child increases in vegetable consumption and decreased eating out, among other healthy child nutrition changes.[38] Other studies harnessed the dyad at inception (eg, the prenatal period) to prevent childhood obesity.[39,40] More research is needed to assess the potential for addressing a caregiver's diet throughout varying times in the caregiver and child's life course, as this may help create a foundation of healthy child dietary behaviors that persist as children develop into caregivers. Importantly, when professionals take a patient- or family-centered approach

to care, they can build a trusting relationship with those they work with and better understand a family's abilities for change.[41,42] In addition, the experiences these professionals possess may lead to more effective interventions in practice.[41]

The findings of this study are particularly strengthened by the diversity of perspectives on the concept of the dyad and the dyadic diet. Each professional provided unique insights as they spoke about their engagements with the dyad at different levels of the socioecological model across various health care-related fields. For example, on an individual level, pediatricians and internists focused on the clinical dietary health of either the child or adult caregiver, and child care program leaders emphasized the health education and development of a child. On the interpersonal level, an early parenting specialist and family nurse practitioner brought insight into the relational health and influences of a child and caregiver. At the community and organizational levels, a community health worker and WIC coordinator provided insight into several external factors influencing the dyadic diet. Overall, professionals emphasize that healthy dyadic eating must be taken in a context as influenced by individual, caregiver-child, family (relationship, structural, temporal), and socioeconomic factors. The insights gained in the study are particularly valuable for pediatric professionals to address a child's diet through a dyadic lens with a socioecological approach.[43,44]

This study has a few limitations. We found thematic saturation with our sample size, but there remains additional information regarding this work when examined in alternate settings.[45] Furthermore, there is potential for selection bias. Although the sample included professionals who primarily worked with adults (eg, internists, dieticians, nurse practitioners), the sample included a greater number of professionals who worked directly and/or primarily with children. Future studies may explore perspectives from professionals working evenly with children and adults. The study participants were also based in the greater New York City area, and therefore, their experiences may not reflect populations in other regions. There is also a potential for interview bias, given the interviewer introduced the concept of the dyadic diet to the participant, which may have the potential to bias the interview toward the importance of the dyadic concept. Furthermore, participants may have introduced recall and/or disclosure biases in their responses, which is always the case in survey or interview methods that rely upon participant self-report of prior experiences.[46] Importantly, the findings highlight how context influences the concept of the dyadic diet, but this also suggests the concept is much more complex than could be elucidated in the current study and so warrants further investigation. These biases and limitations, taken together with the fact that qualitative research is intended to be hypothesis-generating, should caution the interpretation of the study findings to limit generalizability. Despite this, our study findings strengthen future research by the unique involvement of the perspectives of child care and health care professionals.

In conclusion, embracing the dyadic diet is crucial, as a caregiver and child have a bidirectional influence on each other. Pediatric, family, and adult-focused health professionals, as well as future interventions, should consider promoting family-wide or dyadic contexts rather than focusing on the child or caregiver individually, without considering the others' health behavior. However, in doing this, obstacles to healthy dyadic eating must be addressed to attain intervention goals.

Author Contributions

Ms. Nita and Dr. Ortiz conceptualized and designed the study, created the interview guide, collected data, carried out the initial analysis, drafted the initial manuscript, and reviewed and revised the manuscript. Dr. Chen contributed to study design, analyzed data, and reviewed and revised the manuscript. Ms. Chicas and Dr. Pina designed the study, coordinated and collected data, and reviewed and revised the manuscript. Drs. Schoenthaler, Gross, and Duh-Leong conceptualized and designed the study and critically reviewed the manuscript for important intellectual content. All authors approved the final manuscript as submitted and agree to be accountable for all aspects of the work.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article. RO reports receiving consulting fees from the ACEs Aware Initiative for work unrelated to and outside of the content of this study. All other authors declare that there are no conflicts of interest.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: The KiDs of NYU Foundation.

ORCID iDs

Abigail Nita https://orcid.org/0009-0007-3140-8091

Robin Ortiz https://orcid.org/0000-0002-0957-5850

Carol Duh-Leong https://orcid.org/0000-0001-5648-580X

Supplemental Material

Supplemental material for this article is available online.

References

1. Gaye B, Tajeu GS, Vasan RS, et al. Association of changes in cardiovascular health metrics and risk of subsequent cardiovascular disease and mortality. *J Am Heart Assoc*. 2020;9(19):e017458. doi:10.1161/JAHA.120.017458.
2. Lloyd-Jones DM, Allen NB, Anderson CAM, et al. Life's essential 8: updating and enhancing the American Heart Association's construct of cardiovascular health: a presidential advisory from the American Heart Association. *Circulation*. 2022;146(5):e18-e43. doi:10.1161/CIR.0000000000001078.
3. Steinberger J, Daniels SR, Hagberg N, et al. Cardiovascular health promotion in children: challenges and opportunities for 2020 and beyond: a scientific statement from the American Heart Association. *Circulation*. 2016;134(12):e236-e255. doi:10.1161/CIR.0000000000000441.
4. Lloyd-Jones DM, Hong Y, Labarthe D, et al. Defining and setting national goals for cardiovascular health promotion and disease reduction. *Circulation*. 2010;121(4):586-613. doi:10.1161/CIRCULATIONAHA.109.192703.
5. Allen NB, Krefman AE, Labarthe D, et al. Cardiovascular health trajectories from childhood through middle age and their association with subclinical atherosclerosis. *JAMA Cardiol*. 2020;5(5):557-566. doi:10.1001/jamacardio.2020.0140.
6. Studer-Perez EI, Musher-Eizenman D. Children's influence on parents: the bidirectional relationship in family meal selection. *J Child Fam Stud*. 2022:1-9. doi: 10.1007/s10826-022-02520-w.
7. U.S. Department of Agriculture and U.S. Department of Health and Human Services. *Dietary Guidelines for Americans, 2020-2025*. 9th ed. December 2020, Dietary Guidelines.gov.
8. Dietary recommendations for healthy children. American Heart Association. Accessed March 29, 2024. https://www.heart.org/en/healthy-living/healthy-eating/eat-smart/nutrition-basics/dietary-recommendations-for-healthy-children
9. Care for families improves outcomes: the importance of dyadic services. Schuyler Center for Analysis and Advocacy. Published 2022. Accessed July 20, 2023. https://scaany.org/care-for-families-improves-outcomes-the-importance-of-dyadic-services/
10. Brown CL, Perrin EM. Obesity prevention and treatment in primary care. *Acad Pediatr*. 2018;18(7):736-745. doi:10.1016/j.acap.2018.05.004.
11. Hampl SE, Hassink SG, Skinner AC, et al. Clinical practice guideline for the evaluation and treatment of children and adolescents with obesity. *Pediatrics*. 2023;151(2):e2022060640. doi:10.1542/peds.2022-060640.
12. National Academies of Sciences, Engineering, and Medicine; Division of Behavioral and Social Sciences and Education; Board on Children, Youth and Families; Committee on Supporting the Parents of Young Children; Breiner H, Ford M, Gadsden VL, eds. Parenting matters: supporting parents of children ages 0-8. In: *Parenting Matters: Supporting Parents of Children Ages 0-8*. Washington, DC: National Academies Press; 2016. Accessed July 26, 2023. https://www.ncbi.nlm.nih.gov/books/NBK402028/
13. Wood AC, Blissett JM, Brunstrom JM, et al. Caregiver influences on eating behaviors in young children. *J Am Heart Assoc*. 2020;9(10):e014520. doi:10.1161/JAHA.119.014520.
14. Joyce JL, Zimmer-Gembeck MJ. Parent feeding restriction and child weight. The mediating role of child disinhibited eating and the moderating role of the parenting context. *Appetite*. 2009;52(3):726-734. doi:10.1016/j.appet.2009.03.015.
15. Ventura AK, Birch LL. Does parenting affect children's eating and weight status? *Int J Behav Nutr Phys Act*. 2008;5(1):1-12. doi:10.1186/1479-5868-5-15.
16. Webb HJ, Zimmer-Gembeck MJ, Scuffham PA, Scott R, Barber B. Family stress predicts poorer dietary quality in children: examining the role of the parent–child relationship. *Infant Child Dev*. 2018;27(4):e2088. doi:10.1002/icd.2088.
17. Pearson N, Biddle SJ, Gorely T. Family correlates of fruit and vegetable consumption in children and adolescents: a systematic review. *Public Health Nutr*. 2009;12(2):267-283. doi:10.1017/S1368980008002589.
18. Thornton RLJ, Glover CM, Cené CW, Glik DC, Henderson JA, Williams DR. Evaluating strategies for reducing health disparities by addressing the social determinants of health. *Health Aff (Millwood)*. 2016;35(8):1416-1423. doi:10.1377/hlthaff.2015.1357.
19. Williams DR, Costa MV, Odunlami AO, Mohammed SA. Moving upstream: how interventions that address the social determinants of health can improve health and reduce disparities. *J Public Health Manag Pract*. 2008;14(suppl):S8-17. doi:10.1097/01.PHH.0000338382.36695.42.
20. Descarpentrie A, Saldanha-Gomes C, Guivarch C, et al. Family socioecological correlates of lifestyle patterns in early childhood: a cross-sectional study from the EDEN mother–child cohort. *Nutrients*. 2021;13(11):3803. doi:10.3390/nu13113803.
21. Zimmer MC, Rubio V, Kintziger KW, Barroso C. Racial/ethnic disparities in dietary intake of U.S. children participating in WIC. *Nutrients*. 2019;11(11):2607. doi:10.3390/nu11112607.
22. Hillemeier MM, Morgan PL, Farkas G, Maczuga SA. Quality disparities in child care for at-risk children: comparing head start and non-head start settings. *Matern Child Health J*. 2013;17(1):180-188. doi:10.1007/s10995-012-0961-7.
23. Scaglioni S, De Cosmi V, Ciappolino V, Parazzini F, Brambilla P, Agostoni C. Factors influencing children's eating behaviours. *Nutrients*. 2018;10(6):706. doi:10.3390/nu10060706.
24. Martin Biggers J, Quick V, Zhang M, Jin Y, Byrd-Bredbenner C. Relationships of family conflict, cohe-

sion, and chaos in the home environment on maternal and child food-related behaviours. *Matern Child Nutr*. 2017;14(2):e12540. doi:10.1111/mcn.12540.
25. Datagain Transcription. Datagain. Published 2021. Accessed July 26, 2023. https://transcription.datagainservices.com/
26. Dedoose. Published 2023. Accessed July 26, 2023. https://www.dedoose.com/
27. Spector ND, Asante PA, Marcelin JR, et al. Women in pediatrics: progress, barriers, and opportunities for equity, diversity, and inclusion. *Pediatrics*. 2019;144(5):e20192149. doi:10.1542/peds.2019-2149.
28. Berge JM, Miller J, Veblen-Mortenson S, Kunin-Batson A, Sherwood NE, French SA. A bidirectional analysis of feeding practices and eating behaviors in parent/child dyads from low-income and minority households. *J Pediatr*. 2020;221:93-98. doi:10.1016/j.jpeds.2020.02.001.
29. Gee DG, Cohodes EM. Caregiving influences on development: a sensitive period for biological embedding of predictability and safety cues. *Curr Dir Psychol Sci*. 2021;30(5):376-383. doi:10.1177/09637214211015673.
30. Yee AZH, Lwin MO, Ho SS. The influence of parental practices on child promotive and preventive food consumption behaviors: a systematic review and meta-analysis. *Int J Behav Nutr Phys Act*. 2017;14(1):47. doi:10.1186/s12966-017-0501-3.
31. Webb D, Byrd-Bredbenner C. Overcoming consumer inertia to dietary guidance 12. *Adv Nutr*. 2015;6(4):391-396. doi:10.3945/an.115.008441.
32. Wilson T, Bendich A. Nutrition guidelines for improved clinical care. *Med Clin North Am*. 2022;106(5):819-836. doi:10.1016/j.mcna.2022.04.007.
33. Stevens J, Kumanyika SK, Keil JE. Attitudes toward body size and dieting: differences between elderly black and white women. *Am J Public Health*. 1994;84(8):1322-1325.
34. Hesse-Biber S, Howling S, Leavy P, Lovejoy M. Racial identity and the development of body image issues among African American adolescent girls. *TQR*. 2015;9(1):49-79. doi:10.46743/2160-3715/2004.1937.
35. Di Renzo GC, Tosto V. Food insecurity, food deserts, reproduction and pregnancy: we should alert from now. *J Matern Fetal Neonatal Med*. 2022;35(25):9119-9121. doi :10.1080/14767058.2021.2016052.
36. Camp NL. Food insecurity and food deserts. *Nurse Pract*. 2015;40(8):32. doi:10.1097/01.NPR.0000453644.36533.3a.
37. Dallacker M, Knobl V, Hertwig R, Mata J. Effect of longer family meals on children's fruit and vegetable intake: a randomized clinical trial. *JAMA Network Open*. 2023;6(4):e236331. doi:10.1001/jamanetworkopen.2023.6331.
38. Marshall AN, Markham C, Ranjit N, Bounds G, Chow J, Sharma SV. Long-term impact of a school-based nutrition intervention on home nutrition environment and family fruit and vegetable intake: a two-year follow-up study. *Prev Med Rep*. 2020;20:101247. doi:10.1016/j.pmedr.2020.101247.
39. Katzow MW, Messito MJ, Mendelsohn AL, Scott MA, Gross RS. Protective effect of prenatal social support on the intergenerational transmission of obesity in low-income Hispanic families. *Child Obes*. 2023;19(6):382-390. doi:10.1089/chi.2021.0306.
40. Vandyousefi S, Messito MJ, Katzow MW, Scott MA, Gross RS. Infant appetite traits, feeding practices and child obesity in low-income Hispanic families. *Pediatr Obes*. 2022;17(8):e12913. doi:10.1111/ijpo.12913.
41. Committee on Hospital Care and Institute for Patient- and Family-Centered Care. Patient- and family-centered care and the pediatrician's role. *Pediatrics*. 2012;129(2):394-404. doi:10.1542/peds.2011-3084.
42. O'Connor A, Nolan A, Bergmeier H. Early childhood educators' perceptions of parent–child relationships: a qualitative study. *Australas J Early Child*. 2018;43(1):4-15. doi:10.23965/AJEC.43.1.01.
43. Linke SE, Robinson CJ, Pekmezi D. Applying psychological theories to promote healthy lifestyles. *Am J Lifestyle Med*. 2014;8(1):4-14. doi:10.1177/1559827613487496.
44. Pocock M, Trivedi D, Wills W, Bunn F, Magnusson J. Parental perceptions regarding healthy behaviours for preventing overweight and obesity in young children: a systematic review of qualitative studies. *Obes Rev*. 2010;11(5):338-353. doi:10.1111/j.1467-789X.2009.00648.x.
45. Hennink M, Kaiser BN. Sample sizes for saturation in qualitative research: a systematic review of empirical tests. *Soc Sci Med*. 2022;292:114523. doi:10.1016/j.socscimed.2021.114523.
46. Althubaiti A. Information bias in health research: definition, pitfalls, and adjustment methods. *J Multidiscip Healthc*. 2016;9:211-217. doi:10.2147/JMDH.S104807.