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Perceptions of Low-Income Mothers about the Causes and Ways to Prevent Overweight in Children

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Abstract

Background—Childhood overweight and obesity remain major health conditions, affecting nearly one-third of children in the United States. Multiple factors have been identified that contribute to children becoming overweight; however, little is known regarding what low-income mothers perceive to be the causes of and the ways to prevent children from becoming overweight.

Methods—Low-income mothers (n = 286) with children aged 4–8 years participated in semi-structured interviews during which they were asked their opinions about the causes and ways to prevent children from becoming overweight. After themes were identified, interviews were coded for the presence or absence of each theme.

Results—The majority of mothers were non-Hispanic White (69.2%) and overweight or obese (77.3%). Additionally, many of the children (41.9%) were overweight or obese. Six causes of children becoming overweight were identified by mothers: types or quantities of food eaten (90.9%); parenting behaviors (44.9%); lack of activity (42.3%); genetics, slow metabolism, or medical issues (24.5%); stress or emotion (5.2%); and limited access to resources (3.5%). Five ways to prevent children from becoming overweight identified by mothers included: healthy eating (84.9%), more activity (54.8%), limiting screen time (19.9%), limiting sugar-sweetened beverages (SSBs) (12.2%), and drinking more water (6.6%). The majority of mothers (77.1%)

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reported that they carried out their suggestions to prevent their children from becoming overweight.

Conclusion—Within this cohort with a high prevalence of maternal and child overweight, most mothers identified many of the evidence-based strategies for childhood obesity prevention. Future intervention development may benefit from focusing on content areas that were less commonly identified by mothers as well as helping mothers translate knowledge to implementation.

Introduction

Almost one-third of children in the United States are overweight or obese, which contributes to adverse health consequences and comorbid conditions that often persist into adulthood (Berenson, 2012; Daniels, 2009; Freedman et al., 2007; Ogden et al., 2010; Zappalla, 2010), particularly for children from low-income and minority groups (Anderson & Whitaker, 2009; Bluford & Scalton, 2007; Crawford et al., 2001). Multiple factors have been identified as significant contributors to obesity in children; however, little is known regarding what mothers perceive as the causes of children becoming overweight as well as the ways to prevent overweight. Understanding parental knowledge and beliefs is an important first step in the development of optimally effective interventions.

A relatively large body of literature exists regarding parental perceptions of a child's weight status; however, few studies have been published that investigate mothers' perceptions of their children's eating habits and physical activity (Pagnini et al., 2007) and potential barriers to healthy diet and physical activity (Jain et al., 2001; Withall, 2009). Most studies used focus groups to obtain data from parents. We identified only one study that examined what mothers believed to be the causes of a child becoming overweight (Jain et al., 2001). We could not identify any studies that specifically examined what mothers perceived to be ways to prevent childhood overweight as the stated objective. Therefore, a qualitative approach with individual interviews was used to examine low-income mothers' perceptions of the causes of and ways to prevent children from becoming overweight.

Method

Sample

Primary caregivers with preschool-aged children were recruited from south-central Michigan in 2009–2011 to participate in a study exploring eating behaviors, related psychological factors, and childhood overweight/obesity. Eligibility criteria for the initial study included that the primary caregiver spoke English and had a child between 3 to 4 years of age enrolled in Head Start, a federally-funded educational program for preschool children from low-income families. Exclusion criteria included the child having significant medical or perinatal problems influencing their health or development, gestational age less than 35 weeks, being in foster care, or primary caregivers having an educational level equivalent to 4 years of college or more.

Participants were then invited to take part in a follow-up study conducted from 2011–2013 that explored feeding beliefs and practices. This report describes responses to semi-structured interviews used to elicit parent perceptions of the causes of and ways to prevent

children from becoming overweight. It includes data from 286 participants who were female primary caregivers and had complete data for all covariates. The majority of the participants (93.7%) were the biological mother of the child. We subsequently refer to them as *mothers*. Institutional review board approval was obtained, and mothers provided written informed consent.

Procedure

Mothers participated in a 45-minute interview. Interviews were conducted by seven full-time research assistants, who each held a minimum of a bachelor's degree and were trained by a research psychologist. Interview training included approaches to establishing rapport, utilizing verbal and non-verbal feedback techniques, including pauses, and knowing when and how to probe for detail. Each research assistant then conducted an interview, which was reviewed by a research psychologist for reliability in interview administration. This process was repeated until reliability of the interview technique was established.

During the interview, three questions were asked: (1) In your opinion, what causes a child to be overweight? (2) Can you help me brainstorm some things parents can do to keep their child from becoming overweight? (3) Do you do any of these things (i.e., suggestions offered in response to the preceding question)?

All interviews were audiotaped and transcribed verbatim. Initially, 29 themes were generated from 45 interviews. These themes were refined to constitute 12 final themes, from which a coding protocol was developed for content analysis (Hsieh & Shannon, 2005). Inter-rater reliability between two researchers was established for each code (Cohen's Kappa 0.70) for 90 interviews. Once inter-rater reliability was established, all interviews were coded.

Demographic data were gathered, and heights and weight of the mothers and children were measured. Body mass index (BMI) was calculated. Mothers were classified as obese (BMI ≥ 30), overweight ($25 \leq \text{BMI} < 30$), or not overweight ($\text{BMI} < 25$). Children's BMI percentiles for age and sex were calculated based on U.S. Centers for Disease Control and Prevention Growth Charts and categorized as obese (≥ 95 th percentile), overweight (≥ 85 th percentile and < 95 th percentile), or not overweight (< 85 th percentile).

Results

Participant Characteristics

Among the 286 mothers included in our analysis, the mean maternal age was 31.1 years ($SD \pm 7.1$), and the mean child age was 70.9 months ($SD \pm 8.3$). The mothers were non-Hispanic White ($n = 198$, 69.2%), Black ($n = 44$, 15.4%), Hispanic ($n = 22$, 7.7%), and from other (e.g., Asian, Native American) racial/ethnic backgrounds ($n = 22$, 7.7%). Most mothers had a high school diploma or some college ($n = 194$, 67.8%). The majority of the mothers were either overweight or obese ($n = 221$, 77.3%) and nearly half of the children of these mothers were overweight or obese ($n = 120$, 41.9%).

Themes

Causes of children becoming overweight—Mothers' perceptions of the causes for children becoming overweight were reflected in six themes that emerged from the interviews.

Types or quantities of food eaten—Types or quantities of food eaten as a perceived cause of children becoming overweight was coded when mothers talked about food or foods, eating or feeding, or identified specific foods, food types or quantities. The theme of types or quantities of food eaten as a cause of children becoming overweight was coded in most (90.9%) of the mothers' interviews. Many mothers made reference to foods that are *not good* or *not healthy* as a cause of children becoming overweight. For example, one mother stated that children can become overweight if they are, "... not eating the proper foods. And not being monitored of what they're eating and stuff." Another mother stated that "... lettin' 'em eat junk food all day and not feeding them good meals" would lead to becoming overweight. Mothers also discussed habits that they considered problematic in statements such as, "... I teach my kids very bad habits on a daily basis because we eat out a lot..." In addition, some mothers identified specific foods that were not healthy. For example, one mother commented "... like if her kids want candy all day. That's what she give 'em all day. ... Cookies and donuts." A few mothers expressed that the food some mothers cook can cause children to become overweight. For instance, one mother said that "... cooking them wrong foods, a lot of greasy foods..." is a cause of children becoming overweight.

Parenting behaviors—We coded parenting behaviors as the perceived cause of children becoming overweight when mothers explicitly used the term *parent* in response to the question regarding what causes children to become overweight. Nearly half (44.9%) of mothers stated that the cause of a child becoming overweight was parenting. One mother stated, "... it's the parents' fault when the child becomes obese because it's the parents that's supposed to be in charge. It's the parent that's supposed to have the rules." Another commented, "I think that's mostly a parent's laziness." Still another mother reported, "The parents not doing anything with them. ... I think a lot of obesity in children is due to the parents' neglect [and] the parents not doing anything with them." Other mothers made reference to parents allowing their children to eat as much as they wanted without limits, as reflected in the statement, "A parent just allows the kid to just eat and eat everything that they want and don't keep them active at the same time..." While many mothers generally referred to parents as the cause of children becoming overweight, some mothers also referenced themselves as a contributor to their child being overweight, "... you know, physically or mentally, whatever you do, it affects your child and, if parents don't see that, like myself, if I didn't see that, then I imagine my children would be very overweight." Elaborating on this theme, one mother related the following:

Because I know that how you grow up and what you turn into is based on your parents, so if I'm sitting up here giving him junk, he's going to be full of junk and overweight, and I don't want that—ever.

Lack of Activity—Lack of activity was coded if the mothers' statements made reference to a lack of activity, exercise, or specific types of activity such as running, playing, sports, and

being outside. Fewer than half (42.3%) of the mothers described lack of activity as a cause of children becoming overweight. Mothers commented that children in general are, "... not getting any recess or any activity and running and playing," "... are just sitting in front of the TV," "they're not getting any exercise...", and, "... it's more to it than just eating, you know, it's like laziness..." One mother related a lack of activity to what children experience at home in the following statement:

...sitting uh, not being active, just sitting on the couch, ... seeing their parents not be active they'll just follow, you know, suit. They'll sit there, and they'll see their mom not being active, their dad not being active, and, you know, sleeping all day, the half of the day...

Another mother's response reflected an awareness of the importance of both food and activity: "A lot, I think a lot of it has to do with not just the food they eat but the inactivity...."

Genetics, slow metabolism, or medical issues—When analyzed separately, genetics, slow metabolism, or medical issues as causes of children becoming overweight were described as perceived causes very infrequently. Therefore, these perceived causes were combined into one theme. We coded this theme if participants made reference to terms such as a genetic or an inherited condition, metabolism (or "how fast you burn food"), a medical condition causing a child to become overweight, or a specific condition such as thyroid disease. Approximately one quarter (24.5%) of the mothers identified genetics, slow metabolism, or medical issues as a cause of children being overweight. For example, one mother commented, "... he's active, it's just his metabolism, you know." Other mothers stated that reasons such as, "it could be in their genes" or "medical problems, like, um, thyroid" could be the cause of a child becoming overweight. Another mother was more explicit in expressing concerns regarding the genetic risks for her own child becoming overweight:

I mean it could be a lot of things like, you know, some kids are just kind of born with it or it's genetic or it could be, you know. And I, like with my daughter ... I worked really hard, you know, 'cause I knew from like the history and everything I knew that there was a good chance that she was going to follow in my path. ..."

Stress or emotion—Stress or emotion was coded if respondents referred to stress, worry, or emotions experienced by the child such as sadness, fatigue, depression, or anxiety as a cause of children becoming overweight. Few mothers (5.2%) identified stress or emotion as a cause of children becoming overweight. Comments supporting this theme included, "... I also believe that stress kind of has a lot to do with children being overweight," "bein' depressed," and "problems at home..."

Limited access to resources—Accessibility was coded if mothers described having limited access to healthy food or limited money to purchase healthy food and exercise equipment or partake in community resources. Very few mothers (3.5 %) identified limited access as a cause of children becoming overweight. One mother said, "I've been to where I

cannot afford to buy the fresh fruit because it's so expensive rather than buy this bag of chips..."

Ways to prevent children from becoming overweight—Five themes were identified in the interviews related to mothers' perceptions of ways to prevent children from becoming overweight.

Healthy eating—Responses were coded as *healthy eating* if mothers referred to the behavior of eating, type of foods to eat (e.g., fruits or vegetables), mealtime, meal planning, or generally referred to foods that should be eaten and/or those that should be avoided. Consumption of water, soda, or juice was not included in this code. Healthy eating was perceived by most mothers (84.9%) as a way to prevent children from becoming overweight. General comments included, "... um instead of junk food providing, um, fruits and vegetables ..." and "... limit the amount of, umm, like snacks and candy ..." Monitoring portions was supported by comments such as, "... it's not what you eat, it's how much of it that you eat so they're—they don't indulge in what they're not supposed to..." and "Portioning their foods out [is important]." The importance of meal planning was also reflected in comments such as the following: "Um, maybe making a meal plan of healthy foods, and probably not going out to like, greasy fast food restaurants very often, like maybe once a month maybe..." The timing of eating was also emphasized as a way to prevent children from becoming overweight. For example, one mother said, "Eat dinner at a reasonable time, [and] make sure they have a good reasonable breakfast to start off their day."

Some mothers emphasized the importance of buying healthier food to prevent children from becoming overweight. This was exemplified when one mother stated, "Stop buyin' the bad food and buy the good food, and, um, there's so many varieties of food out there regardless if one kid didn't like this or like that. I think we can find a medium..." Another mother talked about presenting healthy food options to her child or eating less healthy foods in moderation:

But if she has that like craving for something sweet or something like that, you know, I show her other ways she can get her sweet tooth, you know. ... she really likes green apples and for her that works 'cause they're, you know, sour and sweet and stuff. So I try to do that, and I know that sometimes she's going to want, you know, like some kind of chocolate or something like that, ... so I found these like, ... it's not quite granola, but um, and it just has just like a little drizzle of chocolate, and it works for her. ... So like, I don't want to like, "Hey, no, you can't have that or you can't have this or that." ... It's almost like negotiate or hey this would help with that craving, but it's still healthy, ...

Making healthy foods more appealing for a child also was expressed by one of the mothers:

Um, my kids really don't like —, ... spinach, um, but if I boil it, um, and smash it down a little bit, you know, she — you know she'll eat it that way. ... just doing different things with the vegetables especially, um, there's some cold vegetables

she doesn't like, so I steam 'em, and I'll do it that way. ... just eating healthier and less greasy foods and – and you know anything.”

More activity—If interview responses referred to activity, movement, or exercise, they were coded as *more activity*. Specific activities such as swimming, walking, or organized sports were included. Phrases reflecting movement such as *get them up*, *get them moving*, *not letting them be lazy*, or *get them outside* were also included. More than half (54.8%) of the mothers identified promoting activity as a way to prevent children from becoming overweight. Several mothers simply stated, “... keep 'em active.” Other mothers expressed being active with their children by saying: “Walk with them, play with them, run with them, ...” and “... exercise, take your kid on a walk.” One mother gave suggestions based on personal experience:

I think the best thing for parents to do with the majority of their kids is to stay active with 'em. Take 'em out and do things with 'em, you know, I mean do it like a, you know, a lot of families don't do that, but I mean I try to do it with my kids, take 'em out, you know, ride bikes, take them to the park, you know what I'm sayin', ...”

Limiting screen time—Responses were coded into this theme if reference was made to decreasing television, movie, or video viewing and/or computer game playing. Fewer than twenty percent of mothers (19.9%) reported that limiting screen time was a way to prevent a child from becoming overweight. Mothers stated things such as, “... parents just need to actually give their kids things to do instead of just havin' the TV be their babysitter,” and “Do not let 'em sit in front of the TV and eat.”

Limiting sugar-sweetened beverages—Responses were coded into this theme if mothers identified limiting consumption of beverages containing sugar, such as soda pop, juice, Kool-Aid, or flavored milk, as a way to prevent children from becoming overweight. Slightly more than ten percent (12.2%) of the mothers suggested limiting sugar-sweetened beverages (SSBs) as a way to prevent overweight. Mothers suggested “... keep [soda] pop out of the house...” and “... instead of Kool-Aid, you know, get 'em, get 'em ... I put a little bit of raspberries or strawberries ... it kind of sweetens it up and it flavors the water...” Another mother commented, “... and I don't like sodas and stuff like that, and I think, like, kids these days have way too much soda and way too much juice...”

Drinking more water—Responses were coded into this theme if mothers identified giving water as a way to prevent children from becoming overweight. Few (6.6%) mothers identified drinking water, adding more water to the diet, or increasing water consumption as ways to prevent overweight. Comments related to this theme included, “... less sugar and more water...” and “... make sure they drink plenty of water...”

Carrying out prevention strategies—Mothers were asked whether or not they do what they suggested as ways to prevent overweight in children. Three quarters (77.1%) of the mothers reported that they carried out their own prevention strategies in their own family. One mother stated, “Always. ... We'll swim together ...” Another mother indicated a

positive change in behavior when she stated, “I do now, you know, you just learn as you go ...” Another mother reflected on her actual use of these strategies when she stated, “Yeah, but I’m not perfect.”

Many mothers shared examples of how they carried out their suggested strategies with their own children. One said, “Yes. Like I told you, we get like the jumbo bag of carrots, they love carrots.” Another explained not only how she keeps healthy foods in the house, but also how she manages less healthy options:

A ton of fruit we – we always have fruit in our house. Um, you know, we do have, I guess, what some of what would be considered junk food, but that’s also the food that normally sits there the longest. We don’t really – eat a lot of it, so um, I mean it’s there if we want it, but we just don’t want it.

One mother identified finances as an issue of concern, but found using coupons as a way to buy healthy foods:

Yeah, ... I mean I coupon all the time, ‘cause I’m a stay-at-home mom, we only have one income, so any money I could save is great. ... I usually try to find, you know, the healthier options possible. I mean, we have a little bit of extra money to where, you know, I can buy them fresh fruits and vegetables. ... But if I had to, I’d cut back and just get ‘em like the peanut butter ... ‘cause it’s still better than, you know, candy bars or cheese puffs or Doritos.

Sixteen percent of the mothers reported that they *tried* to carry out their suggested strategies as reflected in comments such as, “Um, well, kind of...” Three percent stated that they did not carry out their suggested strategies, exemplified with comments such as “No. ... not that often.” Another mother emphatically stated, “#*\$@ no! ... I’m too tired when I get home ...” A few mothers (4.0%) responded to the question by answering how they carried out the strategies for themselves, but made no reference to how they did or did not carry out the strategies for their child.

Numbers of Causes or Ways to Prevent Overweight Identified by Mothers

The number of causes of children becoming overweight offered by the mothers varied: one cause was offered by 20.6% of mothers, two causes by 46.2%, three by 24.1%, four by 6.9%, and no cause by 2.1%. The number of ways to prevent children from becoming overweight offered by mothers also varied: one strategy was offered by 40.9% of mothers, two by 35.3%, three by 18.5%, four or more by 2.5%, and no strategy by 2.4%.

Discussion

The purpose of this study was to explore the perceptions of low-income mothers regarding the causes of and ways to prevent children from becoming overweight. To our knowledge, this is the first study to address mothers’ perceptions of causes of and ways to prevent overweight in children. In contrast to prior research on childhood overweight suggesting that parents attribute the cause(s) of children becoming overweight to genetics and family environment (Jain et al, 2001), this study found that mothers identified types or quantities of food eaten, parenting behaviors, and lack of activity as the causes of children becoming

overweight. In our interviews, genetics, slow metabolism, medical issues, stress or emotion, and limited access to resources were less frequently offered as causes for the prevalence of overweight children in the United States. Healthy eating and more activity were described as the primary methods to prevent children from becoming overweight. Among the mothers we interviewed, limiting screen time, limiting sugar sweetened beverages, and drinking more water were less frequently described as ways to prevent children from becoming overweight. Our results suggest that these mothers are indeed hearing the pervasive public health messaging related to healthy eating and activity behaviors; however, the reasons for the high BMI of these mothers and children are unclear.

A common cause of children becoming overweight that was frequently mentioned by the mothers interviewed in this study was the type and/or quantity of food eaten. This was often mentioned in parallel with healthier eating as a way to prevent children from becoming overweight. These articulations are generally consistent with the clinical and public health education messages recommended by the Centers for Disease Control (CDC, 2013), the Institute of Medicine (IOM, 2011), and the American Academy of Pediatrics (AAP, 2014); all encourage eating healthy food as an important lifestyle behavior to help attain and maintain a healthy weight. Specifically, mothers identified eating more fruits and vegetables, monitoring portions, and decreasing sugar intake as common strategies for eating more healthfully. Collectively, mothers clearly expressed their knowledge about which foods to include in their children's diet and which to avoid.

Almost half of the mothers directly identified parents or parenting behavior as a cause of children becoming overweight. Some mothers shared examples of parenting behavior that they had observed, while others reflected on their own behavior. The behaviors that mothers described varied from general comments to more specific opinions related to parent roles, responsibility, and lack of rules. Mothers were resolute when describing their perception that parenting behaviors were the cause of children becoming overweight, and they assigned a great deal of responsibility to themselves and to other parents for children becoming overweight. The mothers' strong feelings that they are responsible for preventing their children from becoming overweight could be capitalized upon in interventions that further empower mothers.

About half the mothers identified inadequate physical activity as a cause of children becoming overweight and expressed the need for increased activity as a way to prevent children from becoming overweight. The importance of increased physical activity as a means to prevent overweight emerged when mothers stated that children should either be active or implied that parents should promote activity by not allowing sedentary behavior. Nevertheless, very few mothers identified reducing screen time as a way to prevent children from becoming overweight, although increasing physical activity along with reducing screen time is recommended by the CDC (2013), IOM (2011), and AAP (2014). Mothers also did not spontaneously comment on the availability of safe environments where children could play. Given that only half of the mothers in our study articulated the promotion of physical activity and few of them mentioned reducing screen time, additional emphasis on these areas in public health messaging and during clinical encounters may be beneficial in addressing the problem of childhood overweight.

Only about one quarter of the mothers identified genetics, slow metabolism, and/or a medical issue as a cause of children becoming overweight. This observation is encouraging, given that Jain et al.'s (2001) study reported that most mothers attributed obesity to genetics alone. The fact that mothers in our study were generally more likely to identify modifiable behaviors as causes of children becoming overweight may reflect a shift in perception within the general public over the past 15 years that signals a greater readiness for behavioral change related to the problem of childhood overweight.

Very few mothers attributed becoming overweight to stress or the lack of access to healthy food or resources for exercise. These findings are not consistent with previous studies (Drewnowski & Darmon, 2005; Drewnowski & Specter, 2004; Powell, et al., 2007) that report associations between the consumption of unhealthy food and lack of access to food as well as its cost. This suggests that our sample of mothers may not have associated limited access to resources as a cause of the prevalence of childhood overweight. It may also suggest that the mothers in our study did not perceive their resources as inadequate. More research is needed to explore these possibilities.

It was surprising that no mothers identified SSBs as a cause of children becoming overweight; moreover, few mothers identified limiting SSBs and adding more water to their child's diet as a way to prevent children from becoming overweight. It is well established that SSBs account for 45–50% of the added sugar to daily caloric intake and are a main contributor of empty calories (Reedy & Kreebs-Smith, 2010). In addition, 50% of SSBs are consumed in the home (Briefel et al., 2009; French et al., 2003), and the soft drink intake of parents has been shown to be a significant factor in determining their children's intake of soft drinks (Grimm et al., 2004). The AAP (2014), IOM (2011), and CDC (2013) all recommend limiting SSBs as a robust, evidence-based strategy to reduce caloric intake and address the issue of children becoming overweight. Increasing public health messaging efforts focused on reducing children's intake of SSBs may be of benefit in addressing childhood overweight or obesity.

The mothers frequently reported that they implemented the prevention strategies they suggested in their own families. However, this observation, coupled with the mothers' knowledge of healthy foods, healthy eating behaviors, and the need for more activity to prevent children from becoming overweight, seemed incongruent with the prevalence of overweight mothers and children among our sample of participants. Possible reasons for this incongruence may include (1) the mothers provided socially desirable responses to our interview questions, (2) the mothers are not implementing strategies with the intensity needed, and/or (3) the mothers are implementing the strategies, but the strategies are ineffective.

There are several limitations to this study. First, results may only be generalizable to low-income families in south-central Michigan. Second, the semi-structured interview did not allow for detailed probing to gain greater understanding of the perceptions of the mothers. Third, it is possible that questions were answered in a socially desirable manner. Finally, mothers who participated in this study may have had a greater interest in strategies for

feeding children or a willingness to participate in research than those who did not participate.

There are several implications of our findings. First, delivering factual content about healthy eating and activity alone may not be an effective strategy for reducing the prevalence of childhood overweight or obesity because most mothers we interviewed were already aware of these health messages. Some notable gaps, however, included reducing SSBs and screen time. Therefore, clinicians might consider focusing the delivery of information about obesity prevention strategies on these two behaviors. Second, our findings suggest that while most mothers are very knowledgeable about obesity prevention strategies, there may be barriers to their ability to implement these strategies in the home. Therefore, the clinician might consider focusing on building strategies with the mother to support behavioral change. Novel strategies that effectively support behavior change are needed.

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Key Messages

1. Mothers demonstrated knowledge of how to eat healthfully as a way to prevent children from becoming overweight.
2. Intake of sugar-sweetened beverages (SSBs) and reducing screen time as contributors to overweight in children were not readily identified by mothers.
3. Emphasizing the need to reduce children's intake of SSBs and screen time may be of benefit in addressing childhood overweight.
4. Novel strategies that effectively support behavior change are needed.