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A qualitative study of parents' perceptions and use of portion size strategies for preschool children's snacks

Christine E. Blake, PhD, RD¹, Jennifer Orlet Fisher, PhD², Claudia Ganter, MPH³, Nicholas Younginer, MA¹, Alexandria Orloski², Rachel E. Blaine, MPH, RD³, Yasmeen Bruton², and Kirsten K. Davison, PhD³

¹Department of Health Promotion, Education, and Behavior, University of South Carolina, Columbia, South Carolina

²Department of Public Health, Center for Obesity Research and Education, Temple University, Philadelphia, Pennsylvania

³Department of Nutrition, Harvard School of Public Health, Boston, MA

Abstract

Objective—Increases in childhood obesity correspond with shifts in children's snacking behaviors and food portion sizes. This study examined parents' conceptualizations of portion size and the strategies they use to portion snacks in the context of preschool-aged children's snacking.

Methods—Semi-structured qualitative interviews were conducted with non-Hispanic white (W), African American (AA), and Hispanic (H) low-income parents (n=60) of preschool-aged children living in Philadelphia and Boston. The interview examined parents' child snacking definitions, purposes, contexts, and frequency. Verbatim transcripts were analyzed using a grounded theory approach. Coding matrices compared responses by race/ethnicity, parent education, and household food security status.

Results—Parents' commonly referenced portion sizes when describing children's snacks with phrases like "something small." Snack portion sizes were guided by considerations including healthfulness, location, hunger, and timing. Six strategies for portioning snacks were presented including use of small containers, subdividing large portions, buying prepackaged snacks, use of hand measurement, measuring cups, scales, and letting children determine portion size. Differences in considerations and strategies were seen between race/ethnic groups and by household food security status.

Conclusions—Low-income parents of preschool-aged children described a diverse set of considerations and strategies related to portion sizes of snack foods offered to their children.

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*Corresponding author: Christine E. Blake, PhD, RD, ceblake@sc.edu[Christine Blake], Not for publication: telephone: 00-1-803-777-1484, Fax number: 00-1-803-777-6290.

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Future studies should examine how these considerations and strategies influence child dietary quality.

Background

A dramatic increase in the prevalence of obesity among young children in the United States has occurred alongside shifts in snacking behaviors (Piernas, C. and Popkin, B.M., 2010; Piernas, C. and Popkin, B.M., 2011). While snacks are considered to be an important part of a healthy diet for preschool-aged children (USDA, 2014), many snack foods consumed by children tend to be energy-dense and of low nutritional quality (Adair, L.S. and Popkin, B.M., 2005; Piernas, C. and Popkin, B.M., 2010). Moreover, the frequency of snacking among US preschool-aged children has increased such that over 25% of preschool-aged children's energy intake today comes from snacks (Piernas, C. and Popkin, B.M., 2010). Snacking also represents a key source of "empty" calories, which offer few nutrients beyond energy and are seen as the root cause of dietary imbalances (Maillot, M. and Drewnowski, A., 2011), particularly among low-income preschoolers who are vulnerable to both poor diet quality and higher rates of obesity (Ogden, J., Reynolds, R. et al., 2006; Gubbels, J.S., Kremers, S.P.J. et al., 2009). In light of these trends, the promotion of healthy snack behaviors is a central component of many interventions to improve children's diet to prevent or treat childhood obesity (Sharma, S., Chuang, R.-J. et al., 2011; Williams, P.A., Cates, S.C. et al., 2014).

While interventions may direct attention toward the quality of snacks offered to children, much less emphasis is placed on snack portion size. The average portion size of foods consumed by US children has increased over the past 40 years (Nielsen, S. and Popkin, B., 2003; Piernas, C. and Popkin, B.M., 2010; Piernas, C. and Popkin, B.M., 2011). This trend is problematic because larger portion sizes have been linked to greater energy intakes among children during specific eating occasions (Fisher, J., Rolls, B. et al., 2003; Huang, T., Howarth, N. et al., 2004; McConahy, K., Smiciklas-Wright, H. et al., 2004) and across the course of a day (Fisher, J.O., Arreola, A. et al., 2007) in experimental and observational studies. This work highlights the need to concurrently address portion while promoting healthy snacking.

The central role that parents play in shaping children's dietary behaviors is widely recognized (Savage, J.S., Fisher, J.O. et al., 2007; Ventura, A. and Birch, L., 2008). Surprisingly little, however, is known about the determinants of portion sizes offered to young children, particularly around snacking. Preliminary research suggests that parents are generally unconcerned about the portion sizes they serve their children and typically make decisions about portion size based on child specific characteristics such as the child's appetite (Crocker, H., Sweetman, C. et al., 2009). At the same time, promising results from a pilot intervention indicate that education and skill building activities around portion size can lead to improvements in parent rightsizing of child food portions (i.e., serving appropriate portion sizes) (Small, L., Bonds-McClain, D. et al., 2012). Research is needed to understand the definitions and considerations that influence the portion sizes offered by parents to young children, particularly around snacking, as well as the specific strategies that parents use to manage portion sizes.

The objective of this research was to qualitatively examine parents' conceptualizations of child snack portion sizes and the strategies they use to portion snacks. The proposed work focused on low-income and ethnic minority parents of preschoolers because this population has been underrepresented in child feeding research (Wardle, J. and Carnell, S., 2007) and are at greater risk of obesity (Drewnowski, A. and Specter, S., 2004; Drewnowski, A., 2009). Semi-structured qualitative interviews were conducted with a diverse sample of non-Hispanic White, African American and Hispanic low-income parents of preschool-aged children who participated in a broader study of parenting around child snacking (Davison, K.K., Blake, C.E. et al., May 2014). To our knowledge, no research to date has examined parents' portion size definitions and strategies specific to child snacking. This research addresses a significant knowledge gap, given that child snacking and the food portion size independently predict higher energy intake and unhealthy weight gain in children.

Methods

Participants

Participants were low-income non-Hispanic white, Hispanic, and African American parents of children age 3 to 5 years who reported primary responsibility for feeding the child most of the time. Inclusion criteria included parental age of at least 18 years and household income $\leq 185\%$ of the poverty level determined by self-reported income or program eligibility (e.g. WIC or SNAP eligible) and child without severe food allergy (ies) (e.g. eggs, nuts, dairy), chronic medical condition (e.g. diabetes) or developmental disorder that influenced feeding. Participants were recruited in Philadelphia and Boston through in person recruitment and flyers posted in WIC offices and online community listings such as Craigslist. All study procedures were reviewed and approved by the Institutional Review Boards at Temple University and Harvard School of Public Health. Parents were provided \$45 in compensation for their participation and fare for public transportation to the interview site.

Procedures

Parents completed a 60–90 minute in-depth interview in English or Spanish with a trained research assistant. The interview guide, which was structured for the broader study on parenting around child snacking, included questions about parents' conceptualizations of child snacks, purpose for giving snacks, child snacking contexts, and frequency of giving different snacks (Figure 1). Five research assistants including one bilingual assistant (English-Spanish) conducted the interviews. An expert in qualitative methods trained the interviewers to conduct the qualitative in-depth interviews during a two-day workshop. After completing the interview, parents completed a brief questionnaire that included standard demographic questions including age of parent, age of child, education, income, gender, race/ethnicity, number of children in household as well as household food security using the USDA 6-item short form of the U.S. Household Food Security Survey Module (USDA, 2014).

Data analysis

All interviews were audio-recorded and transcribed verbatim and later verified by the interviewer. Field notes were completed immediately after each interview to provide a description of the setting and other observations not captured directly through the interview to facilitate data analysis. For the broader study on parenting around child snacking, a combination of grounded theory and theory-guided approaches were utilized to analyze the data. (Greene, J.C., 1993; Charmaz, K., 2000). A preliminary list of food parenting practices was developed based on prior food parenting theory and research for the broader study. Initially, a single node, “portion size”, was used to code all passages related to portion size. All members of the research team coded a set of five transcripts using the initial code list, including the “portion size” node, to assess its appropriateness and identify other important food parenting practices to add to the coding scheme. New codes were added as needed based on consensus achieved through multiple peer debriefing meetings. A smaller team of three research assistants then used the coding scheme to code all remaining transcripts; research assistants did not code transcripts for the interviews that they conducted. All transcripts were double coded and discrepancies in coding were discussed at weekly meetings and resolved (Ryan, G.W. and Bernard, H.R., 2000).

Thematic coding of all text passages coded as “portion size” using a grounded theory approach (Charmaz, K., 2000) was conducted by a single research assistant to identify and define sub-themes; this analysis was conducted through peer debriefing during research team meetings to clarify interpretation of coded passages and theme definitions. Parents’ conceptualization and definition of a child portion size, considerations for determining appropriate portion sizes of snack foods served to their preschool-aged children, and strategies they employ to deliver “properly portioned” snacks emerged as important themes at this point in the analysis. Use of considerations and strategy themes were classified as most, many, some, and few based on the proportion of parents who mentioned the theme during the course of the interview to provide a reference for the salience of each theme among this group of parents. The use of portion size subthemes was then compared across parent race/ethnicity and household food security status to gain a better understanding of within and between group differences in the mention of portion size definitions, considerations, and strategies.

Results

Sample characteristics

Participants were 60 low-income parents of preschool-aged children (18 white, 22 African American, 20 Hispanic; 93% mothers). One grandfather and one aunt were included as they fulfilled a parental role in as primary caregivers of the preschool aged children. Approximately half of parents had a high school education or less with the remaining half reporting some post high school education such as technical school or college. Slightly less than 40% of parents were married, or living with a partner and over 50% were overweight or obese. Parents participated in multiple US federal assistance programs that have income eligibility requirements including the Supplemental Nutrition Program for Women, Infants, and Children (WIC) (70%), Supplemental Nutrition Assistance Program (SNAP) (80%),

free or reduced cost school meals (47%) by older siblings, and Head Start (35%); 43% experienced household food insecurity during the preceding year (Table 1).

Portion size definition

When asked to define a child's snack, many parents described snacks in diminutive terms (i.e., with reference to portion size) with phrases such as [a snack is] "Something small", "A small portioned thing", "A little bit", "One little portion of something". A small portion of a food, such as pasta, might be considered a snack while a larger portion of the same food would be considered a meal.

Considerations for determining the portion size of a child's snack

Most parents (35/60) explained that they did not know how they decided how much of a snack to give their preschool child, "I don't know, I just give it to her [#2318- 33 y/o H mother]" or that portioning snacks did not involve decision making since it was just a matter of routine, "I don't know. It's just routine ... I've never really thought how I decide. [#2209- 41 y/o W mother]" Parents reported that they did not think about the size of their child's snacks at all with statements like "Usually I just I don't, um, I don't try to limit the amount that he eats [#2490- 37 y/o W mother]." and "I don't decide the amount until she tells me, "Okay", she doesn't want any more. When she says she doesn't want any more, well then I don't give her more. [#5207- 22 y/o H mother]"

Four general considerations were identified by parents (25/60) who articulated a specific approach for determining the portion size of snacks offered to their preschool children: the healthfulness of the food, snacking location, child hunger, and time since last eating episode (Table 2). Parents explained that these considerations guided their determination through "trial and experience" that involved assessing their child's eating over the course of the day or their child's historical eating behavior.

Healthfulness—Some parents (16/60) decisions about how much of a snack is offered to their children were based on the perceived healthfulness of the food:

"I guess if it was anything healthy I would probably give him as much as he wants. But when it comes to things that are not so healthy I just tell him, you know. One ice cream sandwich is enough. One bowl of ice cream with three scoops is enough. So I kind of cut him off when it comes to that. [#6767- 34 y/o W mother]"

"If it's healthy I'll tend to give her more of the item, whatever it is. Raisins, I'll try to give her you know a good portion of raisins or something like that but with, ..., the unhealthy stuff I'll try to limit the ... portions and just give her like a couple of cookies or you know a couple of pieces of candy so I try to limit the, uh, bad stuff and you know give her a good portion of the healthy stuff. [#2111- 54 y/o W mother]"

Location—The location where the snack is to be eaten guided decisions about amount of food or strategies to ensure a certain portion size of a child's snack by a few parents (7/60):

“...if we’re traveling – stuff like that. He has his own little certain plates with dividers and things. And, little Tupperware containers just for him. [#2198- 27 y/o W mother]” “I do for school, I buy these containers that are, um, have little slots to kind of put small portions separated. [#2490- 34 y/o W mother]”

“I buy a lot of those, um – you know those snack things, they have Oreo cookies prepackaged...Those are great. Especially if we’re gonna go someplace. [#9333- 68 y/o W grandmother]”

Child hunger—Perception of child hunger was an important consideration mentioned by some parents (6/60). Parents’ assessment of child hunger was based on children’s statements and behavior at the time of the snack, the child’s food consumption earlier in the day, and the parents’ prior experience with their preschool child not eating a meal in anticipation of a snack or not finishing meals after having had a snack. For instance, some parents explained that children were given larger or smaller snacks depending on how parents interpreted the amount eaten previously at meals and their expressions of hunger. In cases where they viewed a lack of food intake as the primary problem, parents talked about allowing children to have snacks of larger number or size, particularly those deemed healthy:

“I probably give him like eight snacks a day, I swear, on top of meals. Small ones, but it’s like he’s a grazer. He’ll just eat all day if I left something on the table, he’ll just come back and...I just think he’s so active that it just, you know, he burns everything off because he’s still a little skinny. [#2198- 27 y/o W mother]”;

“I still give her an apple each time, the whole apple, ‘cause I know if she eats the whole apple and she doesn’t eat the food, you know, the dinner ... that’s okay for me. And then I’ll give – if she doesn’t eat the dinner, I’ll give her the whole apple with a yogurt.”; “If he’s hungry and it’s in between meals and he’s had a little bag and he wants more, he’ll have – I’ll let him have more. [#8960- 34 y/o AA mother]”

In cases where parents viewed the child’s requests for snacks to be motivated by want rather than actual hunger, they talked about setting limits on snack number or portion size:

“Sometimes he’ll ask for more, but I won’t give it to him because I think he’s just being greedy. [#1255- 33 y/o AA mother]”

Time—A few parents (3/60) also based the portion size of a snack on how long it had been since their child had last had anything to eat. When asked how they decided how much of a snack to feed their child, parent’s responded:

“It depends on, like, let’s just say he has breakfast at 8:30, and here it is, 11:00, and he never had nothing to eat since then...I give him a yogurt. If he asks for something else, I give it to him, because I know he could – it can be a way he really can be, like, really hungry from 8:00 to 11:00. [#2134- 27 y/o AA mother]”;

“It all depends on what she’s already consumed. So like if I know you had a big lunch, then you might not really need a snack right away [#4209- 34 y/o AA

mother].”; “I also just go by the timeframe. I, of course, keep track of the time that he ate previously. [#4690-27 y/o AA mother]”

Strategies for portioning a child’s snacks

Most parents (54/60) described strategies they used to deliver what they considered to be appropriately portioned snacks to their preschool aged children. Six main strategies emerged 1) the use of small containers to portion snacks (e.g. clear plastic sandwich bags), 2) subdividing larger portions into smaller portions, 3) using prepackaged individual serving snacks, 4) using their hands to measure portion sizes, 5) using measuring cups or scales to measure, and 6) allowing the child to choose the portion size of some snacks (Table 3).

Use of containers—When parents were asked to describe how they decide how much their child would get for a snack, many (39/60) described using containers of a particular size to standardize portion sizes:

“They have them children bowls I think are appropriate because they’re smaller than the regular bowl, and they’re not as deep. So to them, it looks like a lot but it’s really not that much, so I might, uh, fill that up, or put a little bit on a plate, or a sandwich bag or something. [#4209- 27 y/o AA mother]”;

“I go to the – to the dollar store and get the small, compact containers. It says on there, just say snack containers. [#5647- 27 y/o AA mother]”

Parents use of containers commonly included portioning of snacks in re-sealable plastic bags:

“Give him a little plastic baggie. They feel independent with their little sandwich bag and give them some cereal [#3215- 35 y/o AA mother]”;

“Like the crackers and stuff – I’ll put them in a Ziploc bag and he’ll have the bag and he can go ahead and eat it on his own.”;

“I have like a big bag, then that will go in a Ziploc bag, to where I can portion it out, and you can eat that. [#7209- 27 y/o AA mother]”

Subdivide larger portions—About half of parents (33/60) described another strategy for portioning child snacks that involved subdivision of larger foods or packages of food. Parents described purchasing larger packages of snacks and subdividing the larger amount into what they deemed to be appropriate servings for a preschool-aged child:

“If two come in the package I split one. One candy cake, just give them one and one and one and one – don’t give them the whole thing. [#3255- 27 y/o H mother]”;

“...on the back of a pretzel bag, one serving is probably 12 pretzels. I’ll cut that in half because he is a kid. [#5686- 27 y/o AA mother]”;

“I don’t give them two pop tarts. I give them one per child. They don’t get a whole pop tart pack. [#4209- 34 y/o AA mother]”

Prepackaged foods—Some parents (24/60) described purchasing prepackaged individual serving snack foods to simplify the process of providing what they considered to be appropriate snack portion sizes for their preschool children. Parents explained they used prepackaged snacks for convenience and to save time. They often purchased products specifically marketed to children that included cartoon characters or special child-friendly packaging. Children often requested these products and parents reported using them for home consumption, sending with the child to school or others homes, and when being out of the house on errands or social visits:

“Yes, like puddings. Um, the potato chips, I buy the small bag. So when it's finished, that's it. No more. No big bags that she might see and say, "Oh, I want more." Um, the small ice creams. Um, I buy a lot of those, um – you know those snack things, they have Oreo cookies prepackaged” [#9333- 68 y/o W grandmother];

“The fruit snacks, the fruit cups and stuff like that, so you know, they come in like small portions. [#4751- 33 y/o AA mother]”

Use hand for measurement—A number of parents (8/60) talked about using their hands as a way to measure an appropriate child-size portion. Parents found this strategy to be a quick and easy way to have some control over how much of a snack their child was served without having to use utensils or containers:

“...generally I give him a portion with my hand. [#9222- 27 y/o H mother]”;

“I think like it's a three-finger-rule where it's like not too much of a bigger portion than your hand or something. [#3579- 24 y/o W mother]”

Use measuring cups or scales for measurement—Similar to the number of parents who mentioned using their hands to portion snacks, some parents (8/60) reported using measuring cups to measure volume or scales to measure weight of a snack before giving it to their child. Parents using these strategies talked about being very conscious of the amount of a snack their child should have and the amounts they were actually served in different contexts. Some talked about weight concerns for their children and the need to monitor the child's overall kilocalorie consumption:

“I have, um, keys, what are called measuring keys. Little cups. The little cups to measure portions [#7777- 27 y/o H mother]”;

“I give him the quantity. Well, it's a little of, a cup of yogurt sometimes. Later he will ask that... strawberries, oranges. [I measure these] in a cup as well. For – I measure by cups. One cup, two ... [#6319- 27 y/o H mother]”;

“I try to portion it like with, um, sometimes I weight it like on a scale we have in the kitchen [#3579- 24 y/o W mother]”;

“I usually give him four ounces of each snack or meal. [#4269- 30 y/o AA mother]”

Child determines portion size—Some parents (10/60) stated that they set no portion size limits for their child’s snacks. These parents talked about allowing their child to determine how much of a snack they would eat based on their own hunger or desire:

“I don’t try to limit the amount that he eats. Um, he doesn’t really overeat so and he’s really active so I don’t – I don’t really have to think about that. I just put down whatever and if he asks me for more, I’ll give him more. [#2490- 37 y/o W mother]”;

“I usually just give her extra. She can decide on her own when she’s full. Because, I mean, she might just want a little bit or maybe she didn’t eat her snack at school and she is really hungry. [#8432- 27 y/o W mother]”;

“She monitors herself. [#8322- 40 y/o W mother]”

Group differences in portion size definition, considerations, and strategies

A comparison of the portion size considerations and strategies mentioned by parents during interviews suggest possible differences between racial/ethnic groups. More white parents presented any portion size considerations and strategies (11/17 and 17/17, respectively) than African American (8/23 and 19/23) and Hispanic parents (6/20 and 18/20). Healthfulness was used to guide snack portion size decision-making by more white (7/17) and Hispanic (6/20) than African American (3/23) parents. More African American parents used prepackaged snacks (14/23 compared to 2/17 white and 8/20 Hispanic parents). More white parents set no limits to snack portion sizes (5/17 compare to 2/23 African American and 3/20 Hispanic parents). Parents’ approaches to snack portion sizes may also vary with household food security. More food insecure parents described considerations for child snack portion sizes (14/26 versus 11/34). More food secure parents reported using prepackaged snacks (17/34 of food secure versus 7/26 of food insecure parents) and subdividing larger portions (22/34 of food secure versus 11/26 of food insecure parents). More food insecure parents talked about having no portion size limits for their child’s snacks (7/26 food insecure versus 3/34 food secure).

Discussion

The parents of preschool-aged children in this study used a diverse set of strategies to portion their children’s snacks and based their use of particular strategies on a set of contextual considerations. For many parents in this study, snacks were described in diminutive terms (relative to meals) and the determination of what constituted a reasonable snack portion size was roughly guided by the parents’ assessment of the child’s habitual and recent meal time consumption and expected level of satiety. Very few parents in this study reported using measurement and none made reference to expert recommended portion sizes for children. Decisions about size of a portion and number of portions per snacking episode reflected contextual considerations such as time of day, proximity to meals, or location. Strategies, such as use of prepackaged snacks or giving handfuls, depended on these considerations as well as what was available at the time but were generally oriented to limiting portion size. A sizable proportion (35/60) of parents in this study, however, reported giving no consideration to snack portion sizes and using no strategies to control the size or

amount of a snack their preschool-aged child consumed. These findings suggest a wide degree of variation among low-income parents of preschoolers in the factors influencing and strategies used to determine portion sizes of snacks offered to their preschool aged children.

The importance of conceptualizing child snack portion sizes within the context of eating over the course of the day and child's typical eating behavior was important to parents in this study. Children who did not eat well at meals were given larger or smaller snacks depending on how parents interpreted the behavior. If they viewed lack of food intake as the primary problem they talked about allowing snacks of unlimited number or size. If they viewed behavior as the primary problem they talked about setting limits on snack number or size to encourage greater consumption at meals. These findings are consistent with research on the dimensions and classification of eating episodes and the importance of viewing each episode in relation to proximal episodes (Bisogni, C.A., Falk, L.W. et al., 2007). Further, helping parents to assess child feeding problems and offering guidance on parenting practices to improve child eating behavior that is in line with parent expectations could improve child diet quality.

Perceptions of the healthfulness of a snack influenced whether some parents placed any restrictions on a snack portion size as well as the degree of restriction. Providing better guidance on snack healthiness using existing food rating systems such as "Go, Slow, Whoa" classification (Cluss, P., Ewing, L. et al., 2013) or improved front of package nutrition labelling (Bui, M., Kaltcheva, V.D. et al., 2013) may improve dietary quality among preschool aged children whose parents consider the healthiness of a food when making portion size decisions. However, consistent with other studies reporting on parental decision-making around child feeding, we found that for most parents, perceived healthfulness may not be a primary consideration in portion size decisions (Blake, C. and Bisogni, C.A., 2003; Beltran, A., Hingle, M.D. et al., 2011). Future studies should more objectively examine how parents make decisions about snack portion sizes to inform development of promotion campaigns and materials to improve child nutrition.

It is important to note that more than half of parents were not able to articulate how they determined appropriate child portion sizes. This suggests that more education on portioning child's snacks is needed. However, it may also be the case that portioning is a relatively passive process that is highly influenced by situational factors, like package size and child requests, making it less amenable to information-based educational approaches. Greater insight into the willingness of parents to consider deliberately portioning child snacks is warranted.

Parent willingness or unwillingness to utilize strategies that involve food measurement or weighing to provide standard portion sizes has important implications for child feeding recommendations. Very few parents reported measuring snacks to align with nutrition guidelines or explicitly trying to follow these guidelines. Some described using small containers for convenience and portability or their own hands for simplicity and speed. Interventions may be more successful at reducing child overconsumption of snacks if they highlight dishware size as an important influence on how much is served as a snack by providing cues for appropriate portion sizes for parents who do not want to measure and

weight snacks (DiSantis, K.I., Birch, L.L. et al., 2013). While these approaches may be less accurate than the use of measuring cups or scales, they may be a more feasible and acceptable approach for identifying appropriate portion sizes for children.

Common use of prepackaged snacks, especially by African American parents, may have important nutrition implications. Such snacks are often thought to be lower in nutritional quality with high levels of added sugar, trans fats, and sodium. In one study of corner stores in Philadelphia, the majority of available snack items were of low nutritional quality and those of lowest quality were pre-packaged (Lucan, S., Karpyn, A. et al., 2010). Reliance on prepackaged snacks may result in displacement of snacks that include fresh fruits and vegetables or whole grains (Smith, L., Ng, S. et al., 2013). However, some have suggested that recent increases in demand for prepackaged snacks might prompt industry to increase availability of more nutritious options. Also, use of prepackaged snacks for portion control may be useful for limiting excessive energy intake (Ng, S.W. and Popkin, B.M., 2012). The growing trend in use of prepackaged snacks by parents of preschool aged children may be an opportunity for the food industry to think about how to right-size child portions so that the appropriate portion size is the default option (Rolls, B.J., Roe, L.S. et al., 2004; Roberto, C.A., Pomeranz, J.L. et al., 2014). Adults exhibit unit bias, where they tend to eat in units regardless of size. The same thing may be happening with prepacked snacks offered to children where the amount consumed directly reflects the size of the units (Geier, A.B., Rozin, P. et al., 2006; van Kleef, E., Kavvouris, C. et al., 2014) Changes in food packaging could have powerful influence on behavior without much effort as has been demonstrated in studies using “nudges” in which simple environmental modifications lead to changes in food choice behaviours (Hanks, A.S., Just, D.R. et al., 2012). More in-depth study of the nuanced influences of prepackaged snack consumption on child dietary quality is warranted.

This study provides insight into the perceptions of child snack portion sizes among a small sample of 60 parents of preschool-aged children living in two cities in the Northeastern United States. These findings may not be generalizable to other populations. The use of qualitative methods, while limiting generalizability, may have provided a better understanding of how child snack portion sizes are conceptualized and managed by parents than a structured survey. Furthermore, this study allowed parents to discuss their child’s snack portion sizes in the context of their general parenting around snacking.

Conclusions

Findings from this in-depth qualitative study shed light on parents’ conceptualization of portion size in criteria for defining a child snack, their considerations for determining appropriate snack portion sizes and their use of portion size strategies when giving their children snacks. Most parents did not report considering the size of their preschool child’s snacks, but instead relied on more passive or habitual strategies such as using prepackaged foods. Efforts to improve parents portioning of snacks for preschool-aged children should consider how deliberate versus passive strategies vary the ways parents interpret feeding situations. Differences in conceptualization of snack portion sizes and use of portioning strategies by racial/ethnic groups, parent education, child sex, and food security status provide a starting point for future studies.

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Highlights

- Increases in childhood obesity correspond to shifts in child snack portion sizes
- Parents' often define child snacks by portion size
- Parents consider healthfulness, location, hunger, and timing to portion child snacks
- Low-income parents described a diverse set of strategies for portioning child snacks
- Understanding of parent portion size decision making and child diet quality is needed

We are interested in learning more about how you think about [child's name] snack habits and what kinds of things are important when you choose snacks for [him/her]. **So, to start, when I say the word "snack" what do you think of?**

Follow-up questions

- i. What makes something a snack?
- ii. How is it different than a meal?

How do you decide what [child's name] eats for a snack?

Follow up questions

- i. What role does [child's name] have in this decision?
- ii. Are there snacks that you like [child's name] to eat? What things do you do to try to make sure he/she eats those kinds of snacks?
- iii. Are there snacks that you think [child's name] should eat less often? If yes, what things do you try to do to make sure he/she doesn't eat too many of those snacks?

How do you decide how much [child's name] eats for a snack?

Follow up questions

- i. What role does [child's name] have in this decision?
- ii. What things do you do to make sure your child does not eat too much of a particular snack?
- iii. Do you purchase or use any containers or packages so [child's name] will eat the right amount?

How do you decide when [child's name] eats a snack?

Follow up questions

- i. What role does [child's name] have in this decision?
- ii. When does [child's name] eat snacks on weekdays? Weekends?
- iii. Tell me about your child's snack habits between dinner and bedtime. What does this look like?

In what places or situations does [child's name] usually eat snacks? Tell me more about [name place/setting using participant phrasing]

Follow up questions

- i. Why does your child have a snack in [name place/situation]?

When you shop for snacks for [child's name], what helps you decide what to buy?

Follow up questions

- i. Is [his/her] preference an important part of your decision?
- ii. Are there any particular kid-friendly packages or containers [he/she] likes?
- iii. What about colors and cartoon characters?
- iv. What about healthiness of foods?
- v. How about cost?

* Questions included in this figure represent a subset from the larger interview guide and include all questions that generated responses about portioning preschool children's snacks.

Figure 1.
Examples of Questions from Semi-Structured Interview Guide

Table 1

Demographic characteristics of parents (n=60)

Attribute	Summary Statistic	
	n	%
Sex		
Female	56	93.3
Male	4	6.7
Relationship to child		
Mother	55	91.7
Other*	5	8.3
Race		
White	17	28.3
African American	23	38.3
Hispanic/Latino(a)	20	33.3
Education		
Less than High School	10	15.0
High School graduate/GED	28	31.7
Technical school/some college	23	38.3
College graduate or greater	9	15.0
Employment		
Employed/self-employed	22	40.8
Unemployed	28	51.8
Other	4	7.4
Marital Status		
Married or living with partner	23	38.3
Divorced/ Separated	5	8.3
Single	32	53.3
Parent weight status**		
Underweight	1	5.9
Normal weight	7	41.2
Overweight	3	17.7
Obese	6	35.3
Experienced food insecurity in past 12 months		
Yes	26	43.3
No	34	56.7
Participated in assistance programs		
Women, Infants, and Children	42	70.0
Food Stamps/SNAP/EBT	48	80.0
Free/reduced school meals	28	46.7
Head Start	21	35.0

* 3 Fathers, 1 grandfather, and 1aunt;

** Body mass index assessed based on self-reported height and weight and classified as underweight <18.5; normal weight 18.5–24.9; overweight 25–29.9; obese >30.

Table 2

Parents' considerations when making decisions around portion sizes for their preschool child's snacks

Considerations	# Participants (%)	References
Any mention of portion size considerations	25 (42%)	42
Healthfulness of a food	16 (27%)	23
Portion size related to location	7 (12%)	9
Child's hunger	6 (10%)	7
Time since last eating episode	3 (5%)	4

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Table 3

Parents' strategies for delivering appropriately portioned snacks to their preschool child

Strategies	# Participants (%)	References
Any mention of strategies to portion child snacks	54 (90%)	182
Use containers to portion snacks	39 (65%)	63
Subdivide larger portions	33 (55%)	52
Using prepackaged snacks	24 (40%)	32
Use own hands to portion snacks	8 (13%)	11
Use measuring cups to measure snack volume	6 (10%)	6
Use a scale to weigh snacks	2 (3.3%)	2
No limits on portion sizes of some snacks	10 (17%)	16

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