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# A Pilot Study To Explore How Low-Income Mothers of Different Ethnic/Racial Backgrounds Perceive and Implement Recommended Childhood Obesity Prevention Messages

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## **Abstract**

**Background:** Mothers often serve as the "gatekeepers" of food and the eating experience for young children in the home. Children of different ethnic/racial groups have different obesity prevalence rates, but little is known about how mothers of these groups interpret or implement common childhood obesity prevention messages. The purpose of this mixed methods pilot study was to explore comprehension and implementation of common childhood obesity prevention messages and to identify feeding styles among low-income mothers of young children.

**Methods:** White, black, and Hispanic low-income mothers (n=30) of children ages 3–10 were recruited from Indiana. Mothers were interviewed individually regarding the perception and implementation of eight commonly used nutrition and/or physical activity messages. Other outcomes included the results of the Caregiver Feeding Styles Questionnaire and self-reported weight of mothers and child(ren). Interviews were analyzed using thematic analysis to find common themes among the different ethnic/racial groups.

**Results:** Childhood obesity prevention messages were often interpreted or implemented differently among the different ethnic/racial groups. For example, white mothers cited control as a means to manage a child's weight more often compared to the other racial/ethnic groups, whereas black and Hispanic mothers reported catering to a child's preference more frequently compared to white mothers.

**Conclusion:** The pilot study provides evidence that it may be prudent to tailor nutrition messages to mothers of different ethnic/racial backgrounds during nutrition education.

### Introduction

Ithough the prevalence of childhood obesity is alarming, more attention is needed on disparities in US obesity prevalence among different ethnic/racial groups. Currently, prevalence is highest among Hispanic children at 17.9%. Although mothers of young children may be exposed to childhood obesity prevention messages and even acknowledge understanding them, the messages may not be implemented or interpreted correctly. Differences in child feeding practices, barriers to a healthful diet, and implementation or interpretation of messages among mothers of different ethnic/racial groups may not be captured by quantitative measures; thus, qualitative mea-

sures may provide new insights into these differences and contribute to developing culturally appropriate obesity prevention techniques.<sup>5</sup>

The objectives of this study were to determine (1) common beliefs and practices of low-income mothers regarding obesity prevention messages and child feeding, and (2) if differences in beliefs and practices of these messages exist among mothers of different ethnic/racial groups.

## Methods

#### **Participants**

A convenience sample of women (n=30) was purposively recruited across three ethnic/racial groups resulting

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in an equal number of white (n=10), African-American or black (n=10), and Hispanic (n=10) mothers. Inclusion criteria for the study were: 18-50 years of age; mother of at least one child between the ages of 3 and 10; able to read and understand English; self-designation of white, African-American or black, or Hispanic ethnicity/race; living in Indiana; and low income (less than 185% below the poverty line). Recruitment sites included the Special Supplemental Nutritional Program for Women, Infants, and Children offices, Head Start centers, and the Expanded Food and Nutrition Education Program.

As potential participants contacted the study coordinator, they self-reported their ethnicity/race and were placed in the corresponding group. All participants provided written informed consent prior to data collection.

#### Data Collection

A 45- to 60-minute audio-recorded interview was conducted with each mother (n=30) in a private location by the same interviewer. A standard protocol was approved by the Purdue University Human Subjects Institutional Review Board. Eight childhood obesity prevention messages were used to create "cards" containing nutrition or physical activity related messages (Table 1), which were pretested for comprehension with several representative

Table I. Childhood Obesity Prevention Messages and Probes used in Qualitative Interviews

Interviews				
Childhood obesity prevention messages <sup>8,9</sup>	Eat breakfast every day			
	Choose healthful foods when eating out			
	Eat more fruits and vegetables			
	Eat less foods that are high in calories and low in nutrition			
	Eat together as a family			
	Drink less sweetened beverages			
	Limit TV/video games/computer games			
	Watch portion sizes			
Interview probes	I. What have you heard about this message? (perceptions)			
	What do you and your family do about this message?     (practices)			
	3. What do you think other families do about this message? (perceptions)			
	4. How do you think this message impacts a child's weight? (perceptions)			

mothers prior to use and are described in more detail elsewhere.<sup>7</sup>

To allow the interviewer to engage each mother, avoid low literacy issues, and reduce interview time, each message was printed on an individual card and read to the mother. Probes (Table 1) were used to identify perceptions and practices of each message.<sup>8</sup> Projective interviewing techniques, such as asking the participant about other mothers' experiences with the messages, were integrated within the questions to help reduce respondent bias and tendencies to please the interviewer.<sup>9</sup>

To describe the sample, mothers also completed the Caregiver Feeding Styles Questionnaire (CFSQ), a 19-item questionnaire that determines a caregiver's feeding style based on demandingness and responsiveness subscales. The CFSQ classifies parents into one of four feeding styles (authoritarian, authoritative, indulgent, and uninvolved) based on sample median splits of the two subscales (demandingness and responsiveness) and is described elsewhere.<sup>10</sup> It has been previously validated in a diverse sample of low-income parents of preschool age children.<sup>10</sup>

Each mother self-reported age, race, educational level, ethnicity, and employment status, as well as height and weight for themself and their child (Table 2). This study used the two question format of the National Institutes of Health (NIH) policy on reporting race and ethnicity data. <sup>11</sup> From this point on, the authors refer to non-Hispanic, white mothers as "white"; non-Hispanic, African-American, or black mothers as "black"; and Hispanic, all other mothers as "Hispanic."

#### Data Analysis

Thematic analysis, a method in which qualitative data can be organized to communicate themes within the data, <sup>12</sup> was used to analyze the interviews. All interviews were transcribed from the audio tapes. For each of the eight messages (Table 1), themes were identified for each separate probe and separated into practices and perceptions for each ethnic/racial group. 12 Responses within a message were considered a theme if at least half of the mothers in each ethnic/racial group had similar responses to a probe. The interviewer and principal investigator coded participant responses individually by message and then discussed results together until agreement regarding themes was made. Agreement between researchers was approximately 90%. If disagreement occurred, the responses for that message were revisited and discussed until an agreement was met.

## Results

Among all mothers, the most common feeding styles were authoritarian (33%) and indulgent (30%), while authoritative feeding style (17%) was the least common (Table 2).

To summarize themes according to the messages, three overarching categories were used—food messages, eating

Table 2. Characteristics of Low-Income Mothers of Young Children					
Mean	SD				
29.9	6.8				
25.7	6.1				
n	%				
10	33				
10	33				
10	33				
2	8				
13	48				
6	22				
6	22				
Education level					
4	13				
7	23				
17	57				
2	7				
Employment status					
П	37				
4	13				
3	10				
12	40				
Feeding style					
10	33				
5	17				
9	30				
6	20				
	Mean 29.9 25.7  n 10 10 10 2 13 6 6 4 7 17 2 11 4 3 12				

<sup>&</sup>lt;sup>a</sup>Three mothers did not report weight.

behavior messages, and activity messages. Within each message, the themes for each ethnic/racial group were further split into perceptions and practices related to the message (Table 3). Sample quotes are provided in Table 4.

#### Food Messages

White and Hispanic mothers were unfamiliar with the message, "Eat less foods that are high in calories and low in nutrition." Hispanic mothers were unable to connect this message with childhood obesity. Conversely, black mothers were familiar with this message and, were attempting to follow it, even if unsuccessful.

When asked about sugar-sweetened beverages (SSB), mothers in all groups perceived soda as a SSB and believed that the extra sugar or calories in SSB can lead to weight gain. However, children of white and black mothers drank soda infrequently, because it was viewed as a special treat. Differences were found in the types of beverages the children drank most often between the groups. For example, children of black mothers drank water and juice most often while children of Hispanic mothers drank soda and juice most often.

Hispanic and black mothers believed that fruits and vegetables (F/V) are "good for you" or "healthy" but did not impact weight, although misinformation about the mechanisms was common. Alternatively, white mothers believed F/V serve as substitutes of other unhealthy foods, decreasing a child's daily calorie intake. When asked about F/V consumption, black and Hispanic mothers expressed their children's need to eat more vegetables, but found it difficult due to children's taste preferences. To encourage consumption, white and black mothers offer F/V at snacks or meals, with fruits more likely to be snacks and vegetables more likely to be served at meals.

## Eating Behavior Messages

White and Hispanic mothers considered salads a healthful option when eating out. Only white mothers considered other F/V to be a healthful option when eating out. Many mothers chose foods based on taste and not health because they viewed eating out as a rare treat. This may not be an issue for Hispanic and black mothers because they only ate outside of the home approximately two times per month. Conversely, white mothers attempted to choose healthful options or make substitutions when they are out

Regarding breakfast, white mothers believed that it can prevent a person from eating too many calories. Black mothers provided a variety of reasons why a child should eat breakfast every day, including helping a child concentrate at school or preventing overeating at the next meal. Hispanic mothers believed that breakfast improves overall health, but does not impact weight. However, the mothers themselves did not eat breakfast and cited barriers such as time, concerns for weight gain, and lack of hunger.

When asked about portion sizes of foods, Hispanic mothers believed that serving large portions to a child can lead to overeating. Black mothers were unclear on how watching portion sizes can impact a child's weight. However, black and Hispanic mothers revealed that they do not control their child's portion sizes. Alternatively, white mothers believed that if a portion size is not controlled, then a child will overeat. All groups believed that family meals were important for communication and family bonding and frequently ate together. However, during "family meals," some of the mothers sat in a separate room or table from their children or watched TV while they were eating. Even though all groups believed

SD, standard deviation.

Table 3. Themes of Childhood Obesity Prevention Messages by Perceptions and Practices of Mothers (n=30) of Different Ethnicity/Race

Race/ethnicity						
	White, non-Hispanic	Black, non-Hispanic	Hispanic			
Eat less foods that are high in	calories and low in nutrition					
Perceptions	Unfamiliar with this message	Familiar with this message	These foods ("junk food") cause weight gain.			
	Extra calories lead to weight gain.	Following this message prevents weight gain.	No clear connection as to how message impacts weight			
Practices		Attempt to follow this message or change current behavior				
Drink less sweetened beverag	Drink less sweetened beverages					
Perceptions	Soda is a sweetened beverage. Sugar adds calories, which lead to weight gain.	Soda is a sweetened beverage. Kool-Aid is a sweetened beverage. Sweetened beverages have a lot of sugar. Extra sugar can lead to weight gain.	Soda is a sweetened beverage. Extra calories or sugar lead to weight gain.			
Practices	Soda is viewed as a special treat and is allowed occasionally. Children drink milk, water, and juice most often.	Children drink water and juice most often.	Children drink soda and juice most often.			
Eat more fruits and vegetable	s					
Perceptions	Fruits and/or vegetables take the place of other unhealthy foods.	Fruits and/or vegetables are "healthy." No clear connection as to how fruits/ vegetables impact weight	Fruits and/or vegetables are "good for you" or "healthy." No clear connection as to how fruits/vegetables impact weight			
Practices	Offer fruits and/or vegetables at snacks or meals.	Offer fruits and/or vegetables at snacks and meals.	Children prefer fruits over vegetables.			
Choose healthful foods when	eating out					
Perceptions	Salads and fruits and/or vegetables are considered healthy options. Choosing healthful foods prevents weight gain.	Choosing healthful foods prevents weight gain.	Salads are considered a healthy option.			
Practices	Attempt to choose healthy options or make substitutions.	Do not attempt to choose healthy options. Eat outside of the home about two times per month	Eat outside of the home about two times per month			
Eat breakfast everyday	Eat breakfast everyday					
Perceptions	Breakfast starts metabolism or curbs appetite. Breakfast prevents children from overeating at the next meal or snack.	No clear connection as to how breakfast impacts weight	Most important meal of the day  Breakfast keeps people healthy.			
Practices	Children eat breakfast every day, but mom does not.	Children eat breakfast every day, but mom does not.	Children eat breakfast every day, but mom does not.  Mom and children eat breakfast every day.			
Watch portion sizes						
Perceptions	If portion size is not controlled, then children will overeat.		Aware that there are recommended portion sizes for foods Large portions can lead to overeating.			
Practices	Put portions on child's plate. Attempt to control portion sizes.	Child dictates her/his own portion size.	Do not attempt to control portion sizes.			
continued on page 265						

of Mothers $(n=30)$ of Different Ethnicity/Race continued						
Race/ethnicity						
	White, non-Hispanic	Black, non-Hispanic	Hispanic			
Eat together as a family						
Perceptions	Family meals are important for communication. Family meals are beneficial because parents can control a child's intake.	Family meals are important for communication.  No clear connection as to how family meals impact weight or will not impact weight	Family meals are important for communication. Family meals will not impact weight or no clear connection as to how family meals impact weight.			
Practices	Eat all dinner meals together	Eat together about 5–7 times per week	Eat all dinner meals together			
Limit TV/computer/video games						
Perceptions		If children are not watching TV, then they are more active.	If children are not watching TV, then they are more active.			
Practices	Time limit placed on screen time	Limit placed on screen time	Limit placed on screen time Replace screen time with other activities.			

Table 3. Themes of Childhood Obesity Prevention Messages by Perceptions and Practices

that family meals were important for communication, their perception of the impact on a child's weight differed. Black and Hispanic mothers believed that family meals did not impact a child's weight or lacked a clear connection to weight. Conversely, white mothers believed that family meals allow parents to control a child's intake.

### Activity Messages

Black and Hispanic mothers had the perception that screen time displaces physical activity time, whereas white mothers tended to believe that screen time contributed to excessive snacking. As a result, mothers in all groups placed a time limit on screen time for their children, although this limit ranged widely. Specifically, Hispanic mothers replaced screen time with other activities such as bike rides, playing at the park, walking, reading books, and playing outside, especially if the weather was favorable.

## Discussion

Most mothers in this sample had authoritarian or indulgent feeding styles and, although research surrounding the feeding styles of different ethnic/racial groups is inconsistent, low-income mothers have been found to have authoritarian or indulgent feeding styles. 10,13,14 This study provides additional evidence that the authoritative feeding style, which has been associated with positive child eating behaviors, is uncommon among low-income mothers. <sup>10,14</sup> Therefore, education on parent feeding skills may benefit all low-income mothers.

Culture influences a mother's views on nutrition and child feeding. This study uncovered some similarities and differences in obesity prevention message perception and practices across ethnic/racial groups of low-income mothers. Specifically, mothers in all ethnic/racial groups were mostly familiar with the messages; however, misinformation and superficial knowledge was common. This is consistent with previous research with low-income mothers.2,15,16

When comparing groups, white mothers were more verbal about their value of control over their child's dietary intake. Of the three groups, Hispanic mothers tended to have the least knowledge or correct understanding of the relationship of the messages to a child's weight. They also tended to have the least restrictive food practices and often catered to children's preferences, consistent with previous studies. 10,14,17 These attributes may be a contributing factor to the higher prevalence of childhood obesity in Hispanic children and further research should be conducted.

Black mothers in this study catered to their children's preferences by serving larger portions of food their children enjoy. On the basis of other research, this may be to ensure that children eat the food that is served to them so mothers do not have to persuade their child to eat or waste food. 16,18 Low-income mothers, especially black and Hispanic mothers, may benefit from learning how to introduce new foods to their children<sup>18</sup> as well as age-appropriate portion sizes of foods.

While most mothers in this study reported frequent family meals, some of these mothers ate in separate rooms from their children or watched TV during meals, which has been found previously.<sup>16</sup> Furthermore, low-income mothers reported having family meals even when they are eaten in front of a TV, 19 which has been associated with undesirable dietary habits. 20,21

Limitations of this study include its small sample, limited geographic variability, and self-reported height/weight from mothers. Future research should explore the differences and similarities of nutrition knowledge, perceptions of a healthful diet, and implementation of obesity prevention

## Table 4. Sample Quotes, by Theme, of Low-Income Mothers of Different Ethnicity/Race in Response to Childhood Obesity Prevention Messages

#### Eat less foods that are high in calories and low in nutrition

- White mothers are unfamiliar with this message
- "If the food is low in nutrition, I don't think it has much to do with weight." (white mother #9)
- Hispanic mothers were unable to clearly connect how this message impacts weight
  - "Everything affects their weight." (Hispanic mother #1)
- Black mothers attempt to follow this message or change current behavior
  - "We try to follow the message. We eat fried things, but we are trying to add in vegetables." (black mother #1)

#### Drink less sweetened beverages

- White mothers view soda as a special treat and it is allowed occasionally
- "I drink a lot of diet soda. The kids drink milk, water, and juicy juice. If the kids are good they may occasionally be allowed to have one soda about one time a month." (white mother #3)
- Black mothers report their children drink water and juice most often
  - "Sweetened beverages are not a problem for us, but my daughter drinks a lot of juice. I know juice is good but not all day long. It's hard to wean her off
    when she whines." (black mother #5)

#### Eat more fruits and vegetables

- White mothers believe fruits and/or vegetables take the place of other unhealthy foods.
  - o "If they eat more healthy stuff, they won't eat as much of the fattening stuff. A sweet fruit is less calories than a piece of candy." (white mother #3)
- White mothers offer fruits and/or vegetables at snacks or meals
  - "We make our kids eat them (fruits and/or vegetables) at meals. We do sliced apples for snacks. They have to eat a vegetable and a fruit at each meal. They don't get up from the table if they don't eat their fruits and vegetables." (white mother #3)
- Hispanic mothers reported that their children prefer fruits over vegetables
  - "We don't do much about fruits and vegetables. We have two to three fruits each day. My daughters don't eat vegetables." (Hispanic mother #6)

#### Choose healthful foods when eating out

- Hispanic mothers consider salad as a healthy option.
  - "I heard on the TV and radio you should choose salads at McDonald's™." (Hispanic mother #4)
- Black mothers do not attempt to choose healthy options.
  - "We don't eat out often. We go out to eat I time a month. If I'm going out to eat, I'm not trying to think about eating healthy. We get the kids their happy meals and I'm getting a Big Mac." (black mother #9)
- White mothers attempt to choose healthy options or make substitutions.
  - · "We require the kids to eat vegetables or salads prior to other food. I allow them to eat fries if they eat vegetables first." (white mother #3)

#### Eat breakfast every day

- White mothers believe breakfast starts metabolism or curbs appetite
  - "They will be less hungry and won't overeat. They will have better portion control throughout the day. It keeps weight consistent." (white mother #10)
- Hispanic mothers believe breakfast keeps people healthy
  - "It depends on what they eat. If they eat good, then they will be healthy." (Hispanic mother #9)
- Black mothers report that children eat breakfast every day, but they do not.
  - o "If I don't eat breakfast then I have a snack before lunch time. I don't eat it every day because then I would have to get up earlier." (black mother #6)

#### Watch portion sizes

- Hispanic mothers believe large portions can lead to overeating
  - "A child will become obese with large portions because they overeat." (Hispanic mother #8)
- Black mothers allow the child to dictate his or her own portion size
  - "I put food on the kids' plates. I imagine what she will eat and how much it will take her to get full. If she likes something then I may give her a little more
    of that." (black mother #5)
- White mothers attempt to control portion sizes
  - "I give them a little bit of everything at first and if they want more, I just give them a little bit more. I usually stop them after a second serving." (white mother #3)

#### Eat together as a family

- White mothers believe that family meals are beneficial because parents can control a child's intake.
  - "You get to pay attention to what your child is eating. I have one child that would be extremely overweight if I didn't pay attention to what he ate." (white
    mother #8)
- Black mothers report that they eat together about 5-7 times per week.
  - "We eat together because it's convenient, but not every night because sometimes I don't sit down and eat with the kids." (black mother #6)

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## Table 4. Sample Quotes, by Theme, of Low-Income Mothers of Different Ethnicity/Race in Response to Childhood Obesity Prevention Messages continued

#### Limit TV/computer/video games

- If children are not watching TV, then they are more active
  - o "They don't get enough exercise if they are in front of the TV. They will gain weight." (black mother #4)
- Black mothers place a limit on screen time
  - "My son tries to get 4 hours every day. I shut it off after I hour on the weekdays. On Fridays and Saturdays he gets extra time." (black mother #I)
- Hispanic mothers replace screen time with other activities.
  - "We go outside and play. We go to my mom's house when it's cold outside so my kids can play with my sister's kids. They are only allowed I hour each day (TV) when it's nice (outside)." (Hispanic mother #8)

messages among low-income mothers of different ethnicities/races,<sup>5</sup> especially among the Hispanic population, by feeding style of mothers, and within a larger sample.

## Conclusion

The one-size-fits-all approach of childhood obesity prevention messages may not be an effective communication strategy due to differences in interpretation and implementation of messages among mothers of different ethnicities/races. Black and Hispanic mothers may need interventions to decrease sweetened beverage intake and portion control,<sup>22</sup> and all mothers, especially white mothers, may benefit from learning less controlling child feeding techniques.<sup>16,18,23</sup> Last, education for mothers regarding the importance of following these messages themselves, such as eating breakfast every day, should be emphasized.

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#### Author Disclosure Statement

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