

## **EVALUATING PERCEPTIONS OF A SENSORY-BASED NUTRITION CURRICULUM AMONG HEAD START TEACHERS IN MISSISSIPPI**

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### **ABSTRACT**

#### **PURPOSE/OBJECTIVES**

To explore Head Start teachers' perceptions of and attitudes toward the evidence-based obesity prevention curriculum Hip Hop to Health Jr. (HH2H).

#### **METHODS**

Summative focus groups with teachers across three Head Start centers were conducted to explore teachers' attitudes toward the HH2H curriculum. The curriculum consisted of eight weekly nutrition lessons, interactive activities with puppets, taste tests, and physical activity set to music as a component of the Impact of a Preschool Obesity Prevention (I-POP) Intervention. Focus group discussions were audio-recorded, transcribed, and analyzed for themes according to patterns in the data.

#### **RESULTS**

Twenty-one teachers participated in the focus group discussions. Three themes emerged: *Fun, Interactive Curriculum*; *Child Enthusiasm for Healthy Foods*; and *Center-wide Benefits*. Teachers expressed how they enjoyed using the interactive materials and how the puppets added visual focus to reinforce key messages. Teachers noted that children enjoyed the puppets, music, and "I-POP" day. Children were excited about their new-found knowledge about *Go & Grow* foods and their discovery of liking and eating vegetables. Not only did teachers indicate health benefits for the children, but they also realized how the curriculum helped them to eat healthier and exercise. Based on teachers' perceptions, it appeared that the kitchen staff were also influenced by the curriculum, as they started to provide healthier snacks.

#### **APPLICATION TO CHILD NUTRITION PROFESSIONALS**

The HH2H curriculum is a culturally and linguistically appropriate curriculum for children ages 3 to 5 that can address obesity concerns in Mississippi. Using evidence-based, interactive nutrition education materials in early child care centers provides exposure to healthy foods and can establish food habits that may carry over into adulthood. Child nutrition professionals should assess the cultural appropriateness for the children in their programs and provide training for teachers before implementing the curriculum.

**KEYWORDS:** Nutrition Curriculum, Head Start, Preschool Nutrition

## INTRODUCTION

National obesity rates for young children aged 2 to 5 in 2015-2016 were 12.7% (Stierman et al., 2021). Furthermore, Mississippi children have higher than the national average prevalence rates of obesity (Molaison et al., 2020). Data from the Centers for Disease Control and Prevention and National Cancer Institute indicated the majority of US children between the ages 2 to 5 years old are not meeting recommendations for fruit and vegetable intake (Kim et al., 2014; National Cancer Institute, 2014). Children who are unwilling to try new foods or have limited acceptability of foods may be considered picky eaters (Carruth et al., 1998) and have less dietary variety. Dietary variety and acceptability are enhanced when children have multiple exposures and are willing to try new foods (Nekitsing, Blundell-Birtill, et al., 2018; Taylor et al., 2016). Children in daycare or school settings have more opportunities for exposure to new foods and if consumed, can improve dietary adequacy (Carruth & Skinner, 2000). Furthermore, consumption of fruits and vegetables at an early age is associated with healthful dietary consumption in adolescence and adulthood and a decreased risk for obesity (Rolls et al., 2004; Russell et al., 2016)

There are several influential factors that impact children's acceptance of foods including parents or guardians, siblings, peers, social gatherings, and positive reinforcement (Paroche et al., 2017). Child care centers and preschools have an opportunity to influence children in their care to participate in physical activity and consume healthy foods given they may consume up to two thirds of their intake when enrolled in these centers and preschools (Robson et al., 2015).

The Impact of a Preschool Obesity Prevention (I-POP) intervention used the evidence-based obesity prevention curriculum Hip Hop to Health Jr. (HH2H) to promote healthy dietary and physical activity behaviors among Mississippi Head Start children. The purpose of this qualitative research was to explore Head Start teachers' perceptions and attitudes toward the HH2H curriculum.

## METHODS

This research was a collaboration between the Mississippi State Department of Health, the University of Southern Mississippi, and Mississippi Action for Progress (MAP). The research was approved by the Mississippi State Department of Health and the University of Southern Mississippi Institutional Review Boards.

The I-POP intervention consisted of multiple intervention components described elsewhere (Huye et al., 2020), including implementation of the HH2H curriculum. The curriculum consisted of eight weekly nutrition lessons, interactive activities with puppets, storybook readings, taste tests, and physical activity set to music (see Table 1). The lessons focused on identifying *Go and Grow Foods* (i.e., fruits, vegetables, lean proteins, whole grains, and dairy) and *Slow Foods* (i.e., high fat and high sugar foods) using flashcards. Each 20-minute lesson included a key topic (e.g., Fruits) and included a puppet and corresponding activity. In addition to the lesson, a 20-minute, age-appropriate physical activity was incorporated; a variety of physical activities set to music were included in the curriculum on a compact disc. Head Start teachers (N=38) were trained by research staff to implement the curriculum. The HH2H curriculum was implemented center-wide regardless if teachers or the children were enrolled in the I-POP study. As part of the I-POP study, summative focus groups were conducted with

teachers at the follow-up data collection period (i.e., four months post-intervention) at which time there were 29 teachers remaining. All teachers were invited to participate in the focus groups.

**Table 1.** *Hip Hop to Health Curriculum: Lesson Topics, Objectives, Methods, and Activities*

<b>Lesson Number and Topic</b>	<b>Objectives</b>	<b>Lesson Method</b>	<b>Activities</b>
1. Go & Grow Foods vs. Slow Foods	Children will be able to identify Go & Grow vs. Slow foods and know what foods are good for their bodies.	Read <i>Who Helps You Grow</i> book	<ul style="list-style-type: none"> <li>• Go and Grow or Slow Game</li> <li>• Physical Activity Routine</li> </ul>
2. Fruits	Children will be able to identify different kinds of fruits and classify them as Go & Grow foods.	What Am I? Fruit clues with Miss Fruit puppet	<ul style="list-style-type: none"> <li>• Fruit Tasting</li> <li>• Fruit Graph</li> <li>• Physical Activity Routine</li> </ul>
3. Vegetables	Children will be able to identify different kinds of vegetables and classify them as Go & Grow foods.	Read <i>Growing Vegetable Soup</i> book with Mr. Vegetable puppet	<ul style="list-style-type: none"> <li>• Vegetable Tasting</li> <li>• Eat the Rainbow Coloring Picture</li> <li>• Physical Activity Routine</li> </ul>
4. Grains	Children will be able to identify grains, whole wheat bread, and low sugar cereals as Go & Grow foods and white bread and high sugar cereals as Slow foods.	Miss Grain puppet introduces different examples of grains	<ul style="list-style-type: none"> <li>• Whole Wheat Cracker Tasting or Cereal Tasting and Song</li> <li>• Physical Activity Routine</li> </ul>
5. Protein	Children will be able to identify meat, poultry, eggs, beans, and nuts as Go & Grow foods and protein foods that are fried in oil as Slow foods.	Mr. Protein puppet teaches about protein and sings a song; Mr. Fat puppet teaches about Slow proteins	<ul style="list-style-type: none"> <li>• Bake Don't Fry Rhyme</li> <li>• Go &amp; Grow vs. Slow Protein flash Card Game</li> <li>• Physical Activity Routine</li> </ul>
6. Milk	Children will be able to identify milk as a Go & Grow food and be able to list different types of dairy foods.	Miss Dairy puppet teaches is good for bones and teeth	<ul style="list-style-type: none"> <li>• Milk tasting</li> <li>• Milk is Good for Your Teeth Flash Card Game</li> <li>• Physical Activity Routine</li> </ul>
7. Drinking Water and Moving Your Body	Children will be able to identify water as a Go & Grow drink and sugary drinks as Slow drinks. Children will be able to describe how exercise is good for their bodies.	Teacher-led discussion about exercise and water	<ul style="list-style-type: none"> <li>• Puppet Show</li> <li>• Physical Activity Routine</li> </ul>
8. Healthy Snacking	Children will be able to identify Go and Grow snacks and Slow snacks.	Read <i>Thomas Has a Winning Day</i> book	<ul style="list-style-type: none"> <li>• Snack Food Puppet Show</li> <li>• Snack Food Fast and Slow Running Activity</li> <li>• Physical Activity Routine</li> </ul>

## **Participants**

A purposive sample of teachers at intervention sites ( $n = 3$ ) were recruited to participate in a focus group during the follow-up data collection at their respective sites.

## **Data Collection**

Semi-structured discussion guides were composed and included seven questions and two probes regarding teachers' perceptions about the HH2H curriculum and the ease of implementation, perceptions of children's opinions of the activities and materials, and willingness to continue using the curriculum (e.g., *What did you think about the HH2H curriculum? How do you think the children liked the puppets and activities? Were there any foods the children did not recognize or like?*). Focus groups were conducted at the teachers' respective centers. A researcher team member trained in qualitative focus group methods facilitated the discussion, which lasted approximately 45 minutes. Focus group discussions were recorded using an Olympus digital voice recorder (model VN-5200 PC) and transcribed verbatim from the recorder to a Microsoft Word document. Data were de-identified to protect anonymity.

## **Data Analysis**

Debriefing after each focus group provided the researchers with preliminary thoughts regarding data analysis and interpretations, which began the analytic process (Tuckett, 2005). A phased approach as described by Braun and Clark (2006), later coined reflexive thematic analysis (Braun & Clark, 2019), was used to identify patterns in the data. The 6-phase approach consisted of the research team first reading the four transcripts to familiarize themselves with the data before coding. Second, two researchers individually coded the data by labeling segments of data to reflect the essence of the coded text and capture the contextual concepts of the discussion (Braun & Clark, 2006; King, 2004). The data were coded and labeled using Microsoft Word highlighting and reviewer comment functions. Third, the codes were then sorted and categorized into a spreadsheet to identify potential themes. Fourth, the research team reviewed emerging themes related to coded text and corresponding quotes. (Braun & Clark, 2006; Creswell, 2014). Fifth, themes were labeled and defined accordingly. Data saturation was determined when no new insights or themes were identified (Hennink et al., 2011).

## **RESULTS AND DISCUSSION**

Twenty-one teachers participated in four focus groups ranging from four to seven participants across three of the five centers. One center had two focus groups conducted there due to teachers' availability during the school day. All participants were female and African American with a mean age of 43.7 ( $SD = 9.6$ ). Overall, the HH2H curriculum was well received among teachers and children. Three themes emerged from the data: *Fun, Interactive Curriculum*; *Child Enthusiasm for Healthy Foods*; and *Center-wide Benefits*. Table 2 shows representative quotes for each theme.

**Table 2. Focus Group Themes and Representative Quotes**

Theme	Representative Quote
Fun, Interactive Curriculum	<p>“I enjoyed it because it gave you a chance to be animated, you know, it’s like when it was the foods that was the slow foods and you know, you kinda slowed down and go in slow motion.”</p> <p>“Because I am a visual person, I am a visual learner, and some of the kids are visual learners also, so when you had the puppets, it put everything in perspective.”</p> <p>“And the songs, doing the different songs with the exercises, they really enjoyed that.”</p>
Child Enthusiasm for Healthy Foods	<p>“They’ll have those foods at home, and with them tasting [foods at school], they realize they like it, and they say, ‘well imma go home and tell my momma I like this!’”</p> <p>“They enjoyed it [tasting tests], they loved it. We had one child, he was the only one that would eat the bell peppers. And he ate the red, the green, and the yellow.”</p>
Center-wide Benefits	<p>“I enjoyed tasting the foods too.”</p> <p>“They really enjoyed it [the music] and I liked that too, its good exercise.”</p> <p>“I think it was self-explanatory and beneficial for the kids and the teachers as well.”</p> <p>“And it must have helped the kitchen, because we’ve been getting a little healthy snack. Cucumbers and ranch and broccoli and carrots.”</p>

### **Fun, Interactive Curriculum**

The HH2H curriculum used in the I-POP intervention focused on a targeted food with reinforcing, interactive activities and taste-tests. Teachers expressed their enthusiasm for the curriculum and how they enjoyed using the interactive materials. Teachers discussed how the puppets added visual focus to reinforce key messages, as one said, *“When you have something, they can visually see ... they focused on that, and I think it really brought it to life.”* Children also enjoyed the accompanying CD that included songs and rhymes that connected to the curriculum content. Nutrition education curricula targeting specific foods during the lesson and adding interactive learning activities such as rhymes, stories, games, and taste tests can increase children’s willingness to try new foods or foods they may have been unwilling to try previously (Gucciardi et al., 2019; Nekitsing et al., 2019).

### **Child Enthusiasm for Healthy Foods**

Exposing children to multiple opportunities to taste new foods in a variety of social settings can reinforce food acceptance (Nekitsing, Hetherington, et al., 2018). The taste test component of the lesson gave children the opportunity to discover they liked eating vegetables. Teachers

recognized children's responses to the taste tests and new-found knowledge about Go & Grow foods. For example, one teacher said, "*It kind of changed the way they look at stuff because most kids look at food like, 'I don't want that' or 'I'm not going to eat that,' but you know, when we were doing the curriculum, they had a chance to kind of taste it and see what they liked and what they didn't.*" Teachers reported that children liked the foods they tasted at school and were asking their parents for the foods at home. Most often, HH2H lessons were implemented prior to lunch and thus, teachers could further promote tasting and consuming foods provided at lunch. While not all foods were accepted or liked, the teachers would encourage the children to just try it once or just taste a little of it. However, teachers discussed how the children looked forward to "I-POP" day and were excited when they ate their vegetables, as one child expressed when eating peas, "*Mrs. K., I ate my green baseballs today!*" In a similar study with Head Start children, Melnick et al. (2020) found interactive nutrition education in Head Start preschool classrooms significantly increased children's willingness to consume three types of vegetables.

### **Center-Wide Benefits**

Not only did teachers indicate there were health benefits for the children, but they also realized how the curriculum helped themselves to eat healthier and exercise. One teacher reported, "*It's good exercise for the teacher and the kids,*" and another said, "*It made me start eating right.*" Even the kitchen staff started to provide healthier snacks that consisted of raw vegetables and ranch dressing as a dip. Children enrolled in child care centers like Head Start may consume up to two meals per day at the center (Robson et al., 2015) and therefore, teachers and staff have the opportunity to be role models of healthy behaviors (Natale et al., 2014). The Child and Adult Care Food Program, from which many Head Start Centers receive reimbursements for meals served, encourages teachers to eat with the children for a family style meal (U.S. Department of Health and Human Services, 2021). In addition to sitting and eating with children during the meal, encouraging children to eat unfamiliar foods is considered a best practice as well (Battista et al., 2014). Some child care centers have written guidelines for best practice meal time behaviors. However, Erinoshio et al. (2012) found some teachers did not eat with their classroom, especially if there were no written guidelines. In the present study, teachers ate with their classroom and encouraged children to try new foods during taste testing activities as well as during meal and snack periods.

### **Additional Findings**

Although the results of this study were mostly positive, there were a few responses isolated in one center or another from teachers who indicated some children were not able to identify woven wheat crackers (e.g., Triscuit®) or bell peppers or some children had a dislike for celery, carrot, and broccoli. There were a couple of logistical comments related to accompanying materials. The curriculum suggests storybooks to read as part of the lessons (see Table 1); two teachers would have liked to have additional books to go with each lesson. Lastly, there were two teachers who noted the kitchen did not always have the foods for the taste test and they had to purchase the items themselves. Because these comments or topics did not emerge during all focus group discussions, it may not be a good representation of overall perceptions across the study participants. Specifically, food recognition and taste preference may also be associated with family environment or culture (Paroche, et al., 2017) or food insecure households (Eicher-Miller & Zhao, 2018).

## CONCLUSIONS AND APPLICATIONS

The purpose of this research was to describe Mississippi Head Start teachers' perceptions of and attitudes toward the HH2H curriculum and its implementation during the I-POP intervention. Findings of this study indicated the HH2H curriculum was acceptable to teachers who found it easy to implement. The Head Start teachers expressed they would continue to use the curriculum, making it a sustainable option for nutrition and physical activity lessons.

The HH2H is an interactive nutrition education curriculum that has shown to improve overall diet quality and fruit intake among preschool children (Kong et al., 2016). Likewise, studies using interactive nutrition education with the preschool population have resulted in improved willingness to try and consume fruits and vegetables. For example, children participating in sensory-based nutrition education workshops significantly improved fruit and vegetable consumption from pre- to post-intervention (Gucciardi et al., 2019). Children were able to touch and taste a sampling of fruits and vegetables, similar to the I-POP intervention. In a pilot study using the Color Me Healthy! nutrition education curriculum (Dunn et al., 2004), also a sensory-based education, preschool children were exposed to six new fruits and vegetables over four sessions. Post-intervention, children reported liking the new foods and were able to identify new foods on the child care menu (Tande et al., 2014). Findings from these studies indicate positive impacts on children's willingness to try fruits and vegetables following interactive learning activities. Teachers and child care staff can use an interactive curriculum like HH2H to employ taste-testing activities during snack and meal times to encourage consumption of fruits and vegetables.

Using knowledge-based and sensory-based strategies have positive impacts on picky eaters and their willingness to try new foods and potentially improve diet quality in later years. Additionally, employing educational and marketing strategies with parents, teachers, and peers may improve the diets of picky eaters as well as overall healthy lifestyle behaviors (Carruth & Skinner, 2000). Natale et al. (2014) implemented a preschool center-wide intervention using the Social Ecological Model framework to assess a multicomponent obesity prevention intervention. The study involved teacher and parent components because they were considered "nutritional gatekeepers" (p. 696). Study findings were positive, as intervention children consumed more fruits and vegetables than control group children. In the present study, teachers reported children talking about the new foods they were eating at school and asking for them at home. As part of the I-POP intervention, newsletters were sent home to involve parents in what children were learning from the HH2H curriculum; newsletters reinforced key messages and included recipes and tips for parents to encourage healthy eating and physical activity behaviors.

Nutrition education curriculum and intervention materials should be tailored for the target population to ensure it is culturally, linguistically, and age appropriate (National Black Child Development Institute [NBCDI], 2012; Witt & Dunn, 2012). Key messages aimed to improve health of children and their families should be sensitive to community norms and values as well as the socioeconomic status of the population. To help with this assessment, the NBCDI has developed a Cultural Competence Improvement Tool to assist schools and child care providers with assessing the cultural relevance of the nutrition education curriculum and materials. Before implementation of the HH2H curriculum, formative focus groups were conducted to ensure it was culturally, linguistically, and age appropriate to address the child obesity concerns in Mississippi. While no revisions were made to the HH2H curriculum, teachers were able to choose activities from the options provided in the curriculum that best suited their classrooms. In

addition to assessing the cultural appropriateness of nutrition education curricula and materials, child nutrition professionals should provide training for teachers before implementing any new curriculum.

Child nutrition professionals can find the HH2H curriculum on the SNAP-Ed Tool kit Obesity Prevention Interventions and Evaluation Framework webpage (SNAP-Ed Toolkit, 2022). The curriculum costs \$200 per set, which includes lesson plans, flashcards, puppets, storybooks, the physical activity compact disc, and parent newsletters. Contact information is listed on the webpage for purchase inquiries.

A strength of this study included the opportunity to obtain the opinions of and attitudes toward the curriculum from the individuals who implemented it on a weekly basis. The purposive sample also allowed for a range of perceptions from across centers within the Head Start agency. However, this study had some limitations. First, not all intervention sites participated due to the limited number of teachers remaining since intervention implementation and constraints related to the time the focus groups were taking place (e.g., during the school day). While it was convenient to conduct the focus group at each center during data collection, the homogeneity of the group and the familiarity with one another may have influenced comfort levels in disclosing opposing opinions. Furthermore, lack of a note taker during the focus group sessions may have limited the analysis regarding the contextualization (e.g., observation of non-verbal communications, surroundings) of the discussion. However, the researchers believe the debriefing following discussions captured the essence of the discussion and assisted in the analytic process. Lastly, the results may not be representative outside of the Mississippi counties where the Head Start centers were located.

The findings from this study emphasize three key implications: 1) the HH2H is an interactive curriculum that teaches nutrition and physical activity behaviors that may improve acceptance of new foods, dietary adequacy, and fitness; 2) teachers and staff have the opportunities to model healthy behaviors and may themselves benefit in the process; and 3) child care centers are encouraged to initiate mealtime guidelines and train teachers and staff on how to model healthy behaviors in conjunction with guidelines. Using evidence-based nutrition education materials that are interactive like the HH2H curriculum in early child care provide exposure to healthy foods and can establish healthy food preferences that may carry over into adulthood.

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