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Development of a nutrition education tool to reduce the risk of childhood obesity in a northwest Arkansas Hispanic population

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ABSTRACT

The goal of this qualitative research project is to create a bilingual education tool to equip the participants of the English as a Second Language (EASL) class at the Elmdale Elementary School, in Springdale, Ark., to reduce the risk of childhood obesity in their children. Adults of Hispanic descent are at a high risk for developing obesity and so are their children. Children who are overweight and/or obese have a high risk of developing heart disease, diabetes, high blood pressure, and other health complications. As a side effect of the language barrier some Hispanics experience, it may be difficult for them to fully understand nutrition resources in English. A thorough review of the literature was conducted so that the content of the tool conveyed the evidence-based practice in the prevention of childhood obesity. Feedback from two focus groups of twelve adult Hispanic males and females was analyzed to design and validate the content of the tool and an accompanying assessment instrument. All interactions were conducted in English and in Spanish. The developed nutrition education tool is sensitive to language and cultural factors of the Hispanic community. This service-learning project is designed to provide Hispanic families with evidence-based nutrition information in order to reduce the risk of childhood obesity.

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MEET THE STUDENT-AUTHORS

Katherine Ross

My hometown is Benton, Arkansas, and I graduated in May 2015 with a Bachelor of Science degree in Food, Human Nutrition, and Hospitality with a concentration in Dietetics, and a minor in Spanish. I was honored to be Vice President of the Student Dietetic Association this past year. In 2013 I received a Study Abroad Grant from the Honors College that allowed me to study in Quito, Ecuador for a semester. There, I gained fluency in Spanish and my love for the Hispanic culture grew. I plan on continuing to pursue opportunities to work with the Hispanic community as I complete my Dietetic Internship at the University of Puerto Rico Medical Sciences.

I cannot thank my thesis mentor, Dr. Cynthia Moore, and also, Mrs. Mechelle Bailey enough for their support and encouragement throughout this process. I am also honored to have received funding for this honors thesis/project from the Dale Bumpers College of Agricultural, Food, and Life Sciences.

Mallori Sando

I am from Highland Village, Texas, and I graduated from the University of Arkansas in May 2015 with a Bachelor of Science degree in Human Environmental Sciences with a major in Food, Human Nutrition, and Hospitality with a concentration in Dietetics and a minor in Human Development and Family Sciences. I have a passion for health, building relationships, and helping others. I plan on using this passion in my future endeavors. In my spare time I enjoy playing volleyball, exploring outside, snowboarding, and spending time with family and friends.

Thank you to the incredible dietetic faculty, Dr. Moore and Mrs. Bailey, for their continuous support. In addition, thank you Dr. Moore for mentoring me through this project. Lastly, thank you to the Dale Bumpers College of Agricultural, Food, and Life Sciences and its faculty for funding and supporting this honors thesis/project. I am forever grateful.

MEET THE STUDENT-AUTHORS (CONTINUED)

Maria Barrenechea

I was born in Santa Cruz, Bolivia. I moved to Fayetteville in 2011 to initiate my undergraduate education at the University of Arkansas. I graduated in May 2015 with a Bachelor of Science degree in Human Environmental Sciences with a major in Food, Human Nutrition, and Hospitality with a concentration in Dietetics. I have a passion for the Hogs and in 2012 I had the privilege to represent the U of A as an Orientation Mentor.

Being from Bolivia, I have always had an interest to work with the Latino population. In the summers of 2013 and 2014 I had the opportunity to assist a Bolivian Registered Dietitian at Hospital Caja Petrolera de Salud, which increased my passion for the dietetic profession, along with my interest in working with people of Latino descendant. This past year, I have had the opportunity to assist the Wellness Director of Nahbolz Construction in interpreting nutrition consultations for her Latino employees. What really inspired my two partners and me to initiate this research was the 2014 SEC symposium with a focus on the Prevention of Obesity. We saw a need to help prevent obesity, which inspired us to create a nutrition education tool to reduce the risk of childhood obesity. My goals for the future are to become a Registered Dietitian and to make an impact in the community to help improve the health of others.

I want to thank Dr. Cindy Moore for mentoring us through this challenging, yet exciting process. Also, thank you to Ms. Mechelle Bailey for her constant support and advice. Thank you to Dr. Godwin-Charles Ogbeide for serving on our committee. Finally, thank you to the Dale Bumpers College for funding this honors thesis/project.

INTRODUCTION

Obesity is defined as a "Body Mass Index (BMI) at or above the 95th percentile for children of the same age and sex" (CDC, 2012). The prevalence of obesity in the United States is higher among Hispanics and African Americans than any other racial and ethnic group. An estimated 22.4% of Hispanic children and adolescents are obese (Boudreau et al., 2013; CDC, 2014; Greaney et al., 2012). A very limited amount of research has been conducted on the prevention of overweight and obesity among high-risk populations such as Hispanics (Boudreau et al., 2013; Greaney et al., 2012; Pottie et al., 2013).

Language may function as a barrier to delivering services for ethnic populations, especially when the primary language of the individual is not being used (Pottie et al., 2013). The language barrier may not always be evident, as there are reports of individuals who believe to be proficient in another language, but in fact are not (Schyve, 2007).

Latin American women are more likely to initiate lactation, but not likely to exclusively breastfeed for at least six months, which is the accepted prevention method that is seen to lower childhood obesity rates (Birch and Ventura, 2009; Fisher et al., 2000; Harder et al., 2005; Locke, 2002; Menella et al., 2001; Metzger and McDade, 2010; Sullivan and Birch, 1994; Singhal and Lanigan, 2007; Spiegel et al., 2004; Taveras et al., 2010). The longer an infant is breastfed, the less likely the child is to be obese later in life (Thompson and Bentley, 2012). The naturally occurring hormone Leptin is considered to increase satiation (Fisher et al., 2000; Heinig et al., 1993; Lawrence, 2010; Locke, 2002; Spiegel et al., 2004). This allows an infant to recognize when he or she is full, preventing him or her from overeating. Leptin is found in breast milk, but not in formula (Fisher et al., 2000; Heinig et al., 1993; Lawrence, 2010; Locke, 2002; Spiegel et al., 2004).

Hispanic mothers exert greater control over the eating habits of their children and are more likely to have restrictive feeding practices than their white/non-Hispanic counterparts (Taveras et al., 2010). Hispanic mothers are also more likely to pressure or coerce their children to eat more (Taveras et al., 2010). Children whose parents frequently coerce or pressure them to eat have a higher chance of developing childhood obesity.

A greater consumption of fast food is linked with a poorer quality diet, higher BMI, and obesity among adolescents (French et al., 2001; Guthrie et al., 2002). African American and Mexican-American children consume more sugar-sweetened beverages (SSB) in comparison to their Caucasian counterparts, and rates of obesity are more prevalent among Mexican-American boys (Dodd et al., 2013). Reducing the frequency of eating fast food can lead to a lower risk of childhood obesity (French et al., 2001; Guthrie et al., 2002).

Approximately 38% of Hispanics in the United States are obese, and 77% are obese or overweight (Greaney et al., 2012). The number one determinant of childhood obesity is whether one or both parents are obese. Higher percentage of body fat and weight are highly correlated with parental BMI, and family eating habits are among the major predictors of obesity (Salbe et al., 2002; Whitaker et al., 1997). Eating meals as a family is correlated with lower rates of childhood obesity, a healthier BMI, and diet (Fulkerson et al., 2008; Gillman et al., 2000; Jerica et al., 2014).

Adequate sleep is protective against childhood obesity (Taveras et al., 2008; Anderson and Whitaker, 2010; Taheri et al., 2004; Chen et al., 2008). In certain households, five to seven hours may be considered "sufficient" sleep; however, the National Sleep Foundation recommends children receive ten to eleven hours of nighttime sleep (National Sleep Foundation, 2015). Inadequate sleep reduces Leptin, which decreases the ability of the body to detect satiation. Not enough sleep also increases Ghrelin, which increases appetite (Taheri et al., 2004). Latino children are less likely to get adequate sleep (National Sleep Foundation, 2015; Hassan et al., 2011). Not enough sleep at night leads to decreased performance during the daytime, resulting in lower caloric expenditure, low activity level, and a tendency to be more sedentary (Chen et al., 2008).

Limited screen time is linked to beneficial effects on children's BMIs and a decrease in rates of obesity (Epstein et al., 2008; Dennison et al., 2002). The more a child engages in screen-related activities, the less likely he or she is to be physically active (McClure et al., 2013; U.S. Department of Health and Human Services, 2008). Therefore, screen time should limited to less than two hours per day (Epstein et al., 2008; Dennison et al., 2002). The more children engage in sedentary activities, the more likely they are to develop obesity. In order to counteract this tendency, it is recommended that children ages 6 and older get at least sixty minutes of physical activity a day (U.S. Department of Health and Human Services, 2008).

The goal of the qualitative research was to develop a nutrition education tool in order to reduce the risk of childhood obesity, and use focus groups to refine that tool targeted at a Hispanic community in northwest Arkansas. The nutrition education tool was developed and designed to be sensitive to the perceived needs from the focus groups, but supported by current evidence-based literature. It is a bilingual tool, with copies in both Spanish and English.

MATERIALS AND METHODS

An initial review of the literature was conducted in order to gather information to form the content of the nutrition education tool. To obtain appropriate content and language for the nutrition education tool, Hispanic focus groups were consulted and a comprehensive review of the literature was conducted. A focus group is an in-depth and open-ended discussion conducted with a small group of individuals on a specific topic (Greaney et al., 2012; Robinson, 1999). Participants qualified to take part in the study if they were Hispanic and had at least one child under the age of 18 years old. Groups were formed from English as a Second Language (EASL) classes at Elmdale Elementary School in Springdale, Ark. The adults chose to take part in this study on a voluntary, non-incentive basis.

Participants were given a pre-evaluative quiz consisting of eight questions. The quiz was designed to direct the goals of the nutrition education tool, not to measure knowledge or conduct quantitative research. The questions were in English and Spanish, side by side, translated by bilingual members of the research team. After the pre-evaluative quiz, the focus group discussion was initiated. The research team facilitated conversation, but the majority of the open discussion was encouraged to be from the participants. Questions that probed for more details related to the pre-evaluative quiz were asked.

RESULTS AND DISCUSSION

The content of the tool was designed based on current evidence-based literature. The majority of evidence-based literature agrees upon the following methods to reduce the risk of childhood obesity: breastfeeding, discouraging the use of restrictive and coercive feeding practices, reducing the energy density of food, emphasizing parental role-model behavior, adequate sleep, limiting screen time, eating meals as a family, and physical activity.

There were twelve parents involved in the EASL class present to take the pre-evaluative quiz during the researchers' first visit. There were eleven females and one male. All twelve participants gave permission for their responses to be used for research. The results are shown in Table 1.

After the pre-evaluative quiz, the researchers began the focus group discussion questions.

Table 1. Responses from the pre-evaluative and post-evaluative quiz.

Question	Option	Number of Responses (n = 12)	
		Pre-Evaluation	Post-Evaluation
"I believe _____ can reduce the risk of obesity in my child"	Physical activity level of my child	11	11
	If my child eats breakfast	12	12
	The foods I eat	9	9
	Breastfeeding my child	9	11
	My weight	9	9
	Smoking during pregnancy	0	0
	Adequate sleep	11	12
	Healthy weight	8	9
	Limiting screen time	11	11
	Nutrition education	10	11
	How often I exercise	12	12
	Family meals	11	11
	If I eat breakfast	9	11
	Healthy weight gain during pregnancy	8	9
"I am more likely to be aware of my eating choices if I am"	At a healthy weight	5	6
	Overweight	4	5
	No response	2	1
	"I eat for health"	1	0
"I use the nutrition facts label to make choices about the food I buy"	Never	2	3
	Rarely	1	0
	Sometimes	5	6
	Usually	2	1
"I would rather read a nutrition label in"	English	0	0
	Spanish	7[a]	10
	Spanish and English (Both)	7[a]	2
	Doesn't matter	0	0
"I feel confident in selecting healthy food/snacks for my family"	Yes	12	11
	No	0	1
"I am concerned about my child's weight"	Never	1	1
	Rarely	4	2
	Sometimes	3	6

Table 1. *Continued*.

Question	Option	Number of Responses (n = 12)	
		Pre-Evaluation	Post-Evaluation
"I am concerned about my child's weight", *continued*	Usually	1	1
	Almost always	3	2
"I attempt to limit the amount my child eats"	Never	1	1
	Rarely	3	3
	Sometimes	5	5
	Usually	0	1
	Almost always	3	2
"I encourage my child to eat more"	Never	2	4
	Rarely	1	1
	Sometimes	8	6
	Usually	1	1
	Almost always	0	0

[a] Two individuals marked two answers (marked "Spanish" and "Both," accounting for fourteen answers).

During the discussion, the participants exhibited the ability to discern "healthy" foods; although, they admitted to frequent enjoyment of sweets and junk foods. In addition, they mentioned time and work as major barriers that prevented them from eating healthier. The participants stated that were not accustomed to eating three meals per day. In the Hispanic culture adults were more likely to eat two larger meals per day. Many of the participants stated that their children ate three meals per day. The majority of participants worked full-time jobs, which presented a time barrier that could discourage healthier cooking. Many also indicated they did not have time to eat dinner as a family, while others insisted they had family meals most nights. The participants believed it was easier to eat healthily in their home country because healthier foods were more available and affordable. In addition, there were more organic options and no genetically modified organisms (GMO), which they believed to be "unhealthy." Organic foods in their countries were less expensive due to greater availability. Lastly, it was noted that the participants were more likely to exercise when the weather was warm. The researchers concluded that the participants may perform more physical activity outdoors rather than inside. Weather conditions seemed to be a major hindrance to being physically active.

The same 12 individuals involved in the EASL class were present to take the post-evaluative quiz during the researchers' second visit. The post-evaluative quiz was the same as the pre-evaluative quiz and the results are included in Table 1. In the post-evaluative quiz, the participants were encouraged to use the nutrition education tool to answer the questions. However, it was not until the group conversation of the nutrition education tool began that the participants fully comprehended the details of the content. After further focus group discussion, it was evident that there was a greater gap in the nutrition knowledge base of the participants than had been expected.

A crucial role the focus groups played in this study was to provide insight about the content and design of the nutrition education tool. The feedback from the focus groups confirmed that the content of the nutrition education tool was appropriate for this audience. Likewise, based on the input of the participants, the researchers were able to further tailor the content of the tool for their intended audience.

Many changes involved colors, resizing of font, general design, and layout of the nutrition education tool based on feedback from the participants; however, one significant change was made in regard to vocabulary and reading level. Participants also voiced that they would prefer to read a nutrition facts label in English with a Spanish explanation of the information provided. Through this study, the researchers recognized a need for further study of this population. While the development of the nu-

trition education tool is complete, additional pilot and field-testing of the tool, as well as focus group discussions could validate and improve the content and effectiveness of the tool.

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