

MEXICAN AMERICAN MOTHERS' PERCEPTIONS OF CHILDHOOD OBESITY
AND THEIR ROLE IN PREVENTION

A Dissertation

by

ERICA TOBIAS SOSA

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of
DOCTOR OF PHILOSOPHY

December 2009

Major Subject: Health Education

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ABSTRACT

Mexican American Mothers' Perceptions of Childhood Obesity
and Their Role in Prevention. (December 2009)

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The childhood obesity epidemic continues to escalate, disproportionately impacting Mexican American children. It is unclear how Mexican American mothers, who are at high-risk of rearing obese children, perceive childhood obesity, prevention or their role in prevention. Three studies – a systematic literature review, a qualitative study focusing on Mexican American mothers' perceptions of childhood obesity, and a qualitative study examining Mexican American mothers' perceptions regarding childhood obesity prevention and their role in prevention - were used to address this research question.

The first study is a systematic review of the literature regarding Mexican American mothers' perceptions of childhood obesity and their role in prevention. Four databases were searched for relevant articles and 22 studies met inclusion criteria and were included in the review. Social Cognitive Theory was used to sort similar findings across studies and identify scarce areas researched. Major findings included: (a) mothers felt inadequate to be role models for their children's healthy behaviors, (b) mothers did

not identify short-term consequences of childhood obesity, (c) only 23% of studies explicitly used a theoretical framework to guide their study, and (d) most studies used heterogeneous groups (including all caretakers, including all Hispanics/Latinos) to discuss perceptions.

The second study used naturalistic inquiry to examine mothers' perceptions regarding childhood obesity, its causes and its consequences. Using a Social Ecological Model adapted to childhood obesity, the study examined causes of childhood obesity at different levels of influence – intrapersonal, interpersonal, and community. Obesity was identified as an adult issue by the mothers. Mothers were more aware of the health risks associated with having underweight children rather than overweight children. Lastly, mothers identified overweight children as those who are suffering from consequences.

The third study used a narrative inquiry approach to qualitatively investigate mothers' perceptions. Mothers suggested several ways parents could prevent childhood obesity and overweight among their children. However, fathers, grandparents and schools could unintentionally counter mothers' efforts to encourage healthful behaviors. Mothers identified a lack of ability to speak English, feelings of guilt associated with limiting food intake, and a lack of knowledge and skills as impediments in carrying out obesity preventive behaviors within the home.

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1. INTRODUCTION

Hispanic children are disproportionately burdened by childhood obesity. In 2003, Hispanic children had a 21.8% overweight prevalence, compared to only 12.3% among Caucasian children (Kant, 2003). Mexican American children, the largest Hispanic subgroup, had approximately a 37% overweight prevalence in 2004, higher than both Non-Hispanic Black children (35%) and Non-Hispanic White children (16%) (Ogden et al., 2006). As our nation becomes more ethnically diverse, research on health issues impacting these populations is imperative.

Obesity among children is a growing concern for our nation because obese children are at an increased risk of experiencing health conditions and diseases in adulthood. Overweight toddlers are 20% more likely and overweight adolescents are 80% more likely than their non-overweight counterparts to become overweight adults (Guo, Roche, Chumlea, Gardner, & Siervogel, 1994). Children who are overweight by the time they're eight years old experience more severe obesity as adults than those children who become obese later in life (Must, Jacques, Dallal, Bajema, & Dietz, 1992). Obese children, therefore, are more likely to experience issues associated with obesity such as diabetes, high blood pressure, and high cholesterol (Mokdad et al., 2003; Astrup & Finer, 2000). Finally, obese adults are at higher risk than non-overweight adults to experience complications in surgery and require longer recovery times (Byrne, 2001).

This dissertation follows the style of *American Journal of Health Studies*.

Childhood obesity has also engendered strong concerns regarding short-term consequences. Overweight children are commonly teased and marginalized by their peers (Hayden-Wade et al., 2005). Overweight is associated with decreased cognitive functioning among children, even after controlling for parental/familial characteristics (Li, Dai, Jackson, & Zhang, 2008). Overweight children are also less likely to participate in group physical activities due to body-related barriers and self-consciousness, further exacerbating the propensity towards additional weight gain (Zabinski, Saelens, Stein, Hayden-Wade, & Wilfley, 2003).

In recent years, many school-based programs have surfaced to counter the incline in the childhood obesity epidemic; however, scant research examines a critical level of analysis for childhood obesity - the home. Less than three percent of obesity prevention programs focus on the home (Flynn et al., 2006), despite research identifying the influence of the home environment on children's health behaviors (Bowman & Harris, 2003; Gable & Lutz, 2000; Gibson et al., 2007; Patterson et al., 1997; Strauss & Knight, 1999). The home environment is encountered years before the child enters the school system and if the home is conducive to only engaging in unhealthy behaviors, this may counter the effects of school interventions.

The home, itself, is a health-promoting or -hindering environment. Foods available in the home vitally impact a child's dietary preference throughout his/her life (Jahnke & Warschburger, 2008). The household television time is also associated with childhood obesity risk (Ariza, Chen, Binns, & Christoffel, 2004). Within this

environment, interpersonal relationships between the parent and child are also influential (Jahnke & Warschburger, 2008).

Within the home, research suggests mothers significantly shape children's early eating habits (Rollins, Francis, & BeLue, 2007), physical activity (Birch & Davison, 2001), and subsequently child weight status. Despite evidence that mothers' parenting practices and role modeling affect children's eating behaviors and physical activity (Rollins, Francis, & BeLue, 2007), limited research examines how mothers perceive their role. It is unclear if mothers perceive that they influence their children's dietary choices, physical activity and health. Due to mothers' roles in developing and maintaining health-related behaviors among children (O'Brien et al., 2007), it is critical to understand how mothers perceive their role in their households and in facilitating childhood obesity preventive behaviors at home.

This dissertation study aims: (1) to assess the current state of the literature regarding Mexican American mothers' perceptions of childhood obesity and their role in prevention, (2) to qualitatively examine Mexican American mothers' perceptions regarding the childhood obesity concept, causes and consequences, and lastly, (3) to determine how Mexican American mothers perceive their roles in preventing childhood obesity.

This dissertation is presented in article format. The first section includes information regarding the background and significance of the dissertation. The second, third and fourth sections include articles surrounding the main dissertation topic. More specifically, the second section is an article assessing and evaluating the literature

regarding Mexican American mothers' perceptions regarding childhood obesity. The third section is a qualitative article examining Mexican American mothers' knowledge and perceptions regarding childhood obesity, its causes and its consequences. Based on the Social Ecological Model, causes of childhood obesity were classified as intrapersonal, interpersonal, or community-level factors. The fourth section employs a naturalistic inquiry to qualitatively investigate Mexican American mothers' perceptions regarding childhood obesity prevention, their role in prevention and their perceived barriers to engaging in preventive behaviors. The fifth section is a conclusion and summarizes the findings from sections two, three and four. Section five also clarifies each article's relation to the dissertation's main aims and provides recommendations for future research.

2. MEXICAN AMERICAN MOTHERS' PERCEPTIONS OF CHILDHOOD OBESITY: A SYSTEMATIC LITERATURE REVIEW

Approximately 25% of U.S. children are currently overweight or obese (Centers for Disease Control and Prevention, 2009), and the prevalence is expected to triple by the year 2030 (Wang, Beydoun, Liang, Caballero, & Kumanyika, 2008). Among Mexican Americans, the prevalence of childhood obesity is even higher with nearly 34% of school-aged Mexican American girls and 40% of Mexican American boys being overweight (Park, Menard, & Schoolfield, 2001). Considering parents influence a significant portion of risk factors (e.g., food purchases, behavioral modeling) associated with childhood obesity (Birch & Ventura, 2009), their role is critical to counter the rising childhood obesity epidemic.

Both mothers and fathers can shape their children's diet and activity patterns; however, mothers typically are more influential than fathers. In traditional gender roles, women are expected to be the main caregivers for children and these roles are further reinforced in certain cultures, such as the Mexican American culture (Mendelson, 2003b). Mothers tend to spend more time with their children during mealtimes and playtimes, placing themselves in a unique position to have a positive impact on their children's learned health behaviors and subsequent health (Birch & Davison, 2001).

Prior to engaging mothers in childhood obesity preventive efforts, their knowledge and perceptions regarding childhood obesity must be understood. Mothers are less likely to engage in preventive behaviors if they do not perceive childhood

obesity as an important issue and understand its associated consequences (Baughcum, Chamberlin, Deeks, Powers, & Whitaker, 2000). Mothers' knowledge regarding the concept of childhood obesity (i.e., meaning, importance, causes and consequences) and perceptions regarding childhood obesity prevention (i.e., usefulness, effective strategies, barriers to engaging in preventive behaviors, and their role in prevention) will likely affect their probability to engage in preventive behaviors. A review of the literature on mothers' knowledge and perceptions regarding childhood obesity would assist researchers and practitioners in understanding how mothers perceive childhood obesity and prevention.

Although literature reviews have synthesized research on mothers' perceptions of their child's weight, we are aware of only one study that both focused on a broader range of perceptions and on Mexican American mothers (Ward, 2008). Ward's integrative review presented common themes in the literature regarding Mexican American parents' perceptions; however, there are three major characteristics that make the present review unique. Whereas Ward's review used acculturation studies regardless of how acculturation was measured, studies that measure acculturation as language, years lived in the United States or generational status do not directly measure perceptions. The present review, therefore, only used studies that measure acculturation with one or more items assessing an individual's views, perceptions or beliefs, as influenced by their culture and associated transition to U.S. culture. Secondly, this systematic review of the literature assesses and evaluates the methodological quality of the current literature, providing a quality score, or indicator, for included studies. Finally, this review uses a

theory-guided approach to categorize the findings, as has been done in other useful systematic reviews in health education (Buhi & Goodson, 2007; Chen & Goodson, 2007).

The aims of this review presented here are to: (a) assess the literature regarding Mexican American mothers' knowledge and perceptions of childhood obesity, importance of the issue, prevention and their role in prevention, (b) critically evaluate the methodological quality of the research conducted on mothers' perceptions of childhood obesity, and (c) make recommendations for future research on parental perceptions of childhood obesity.

Social Cognitive Theory (SCT) was used to organize the results of this review because SCT incorporates both sociostructural and personal determinants of health (Bandura, 1998). Constructs from the Social Cognitive Theory include, but are not limited to, outcome expectancies, outcome expectations, efficacy, and impediments (i.e., social and physical). Outcome expectancies include the evaluations of the physical, social and self-evaluative outcome expectations resulting from a behavior (Bandura, 1998). If childhood obesity is perceived as a severe health condition, mothers are more likely to engage in behaviors to prevent childhood obesity (outcome expectancy). If, however, mothers do not perceive preventing childhood obesity as an important issue, preventing childhood obesity might not be worth the negative outcome expectations (e.g., loss of time due to cooking, reduced money available due to buying high-priced expensive foods).

Bandura's self-efficacy construct represents an individual's confidence in his/her ability to engage in a specific behavior to achieve a desired outcome (Bandura, 2004). A mother's self-efficacy to engage in behaviors that will prevent her child from developing obesity (i.e., selecting, cooking and serving her child healthy meals, limiting unhealthy snacks, engaging in physical activity with her child, and limiting television viewing time) is influenced by her ability to overcome personal and sociocultural impediments and carry out these behaviors (Bandura, 1998). Further, she must have the knowledge and skill set to engage in behaviors to prevent childhood obesity and believe these behaviors will prevent childhood obesity. Lastly, she must perceive she lives in an environment that is conducive for her to engage in obesity-preventive behaviors.

For the purposes of this literature review, mothers' childhood obesity preventive behaviors include selecting, cooking and serving her child healthy meals, limiting unhealthy snacks, encouraging physical activity through role modeling, and limiting her child's television-viewing time. Each construct is applied to childhood obesity prevention in this review using specific criteria. A mother's knowledge of obesity, its causes and consequences (outcome expectations) is presented first. Then, her perceptions regarding childhood obesity prevention, her role and responsibility are presented second (outcome expectations). Lastly, impediments that hinder her ability to engage in childhood obesity preventive behaviors are presented.

Methods

Four databases (MEDLINE, ERIC, CINAHL, and Psychology and Behavioral Sciences Collection) were searched to identify articles related to parents' perceptions of

childhood obesity. Varying combinations of search terms were used; search terms included parent, mother, father, views, perceptions, beliefs, values, child overweight, obesity and weight. Only articles in English were included. Articles on perceptions of childhood overweight were included if the article: (a) reported on primary data (b) discussed childhood obesity as the key issue or focus, (c) were published within the last nine years, and (d) included at least 20% Hispanics. Articles were excluded if they were: (a) from non-academic sources, (b) written in a language other than English, and (c) focused on children who were 13 years old or older, or (d) examined parents of children who had a condition or disease that affected their diet, physical activity and/or ability to learn related behaviors (e.g., autism). References of reviewed studies meeting inclusion criteria were examined, or purlled, for additional studies of interest. Of the 93 articles found through the primary search, 22 articles were included in the final analysis (see Figure 1).

Data from articles were abstracted using the Matrix Method (Gerrard, 2007). Studies included in analysis were also assigned a quality score based on their use of theory, their design, and methodology. The Methodological Quality Score (MQS) was based on criteria (see Table 1) used in previous health systematic literature reviews (Chen & Goodson, 2007). Scores could range between 4 and 21; higher scores indicated higher methodological quality. Two researchers independently abstracted the data from eight studies (36% of the total studies). Interrater reliability average across these eight studies was calculated; Cohen's κ ranged from .75 to 1.0.

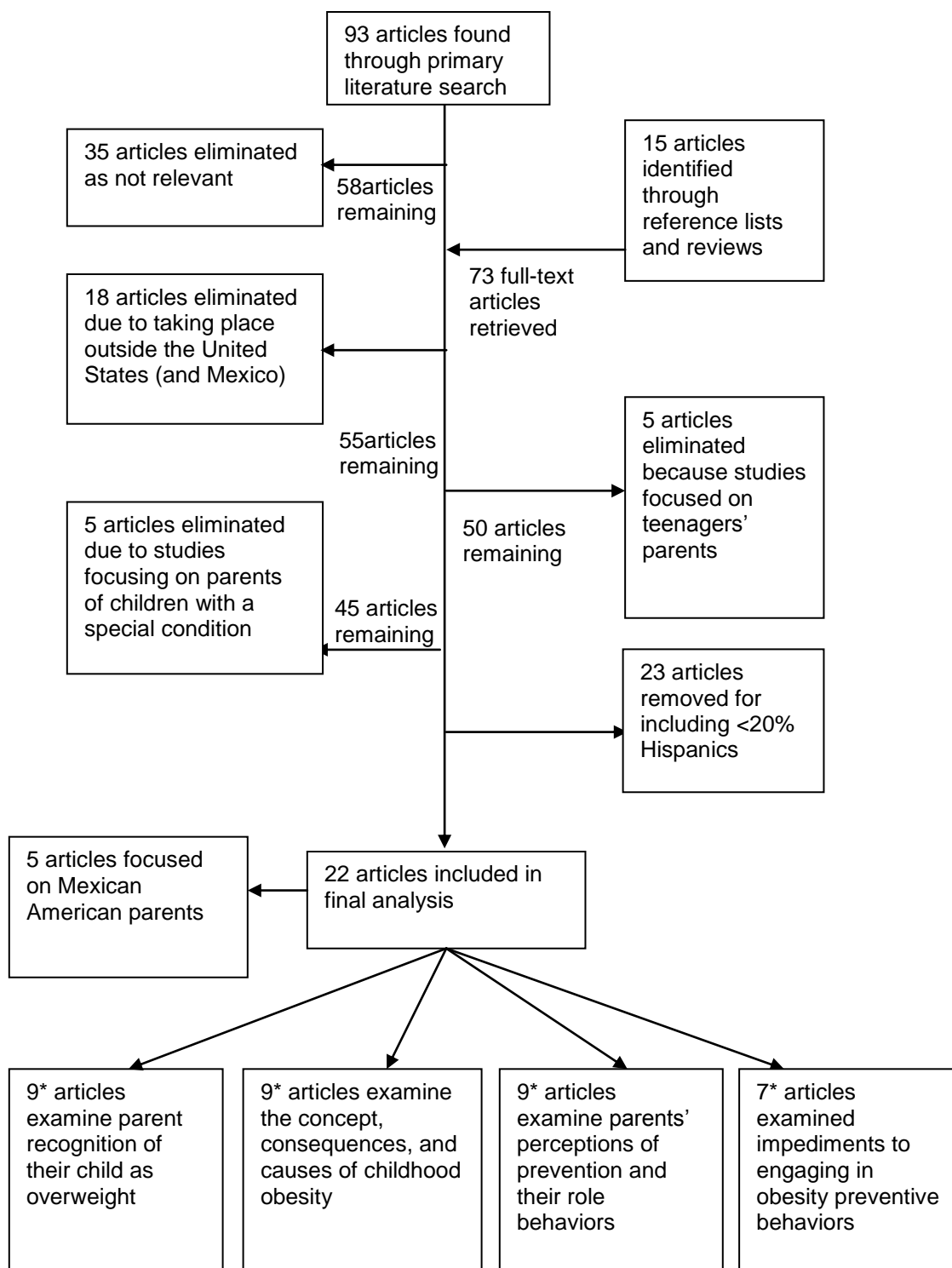


Figure 1. Literature Search Process.

Note: *Many articles examined perceptions in more than one area and are included in multiple categories. For this reason, the numbers add up to more than 22 articles.

Table 1
Methodological Quality Score Criteria

Methodological characteristic	Scoring option
Study design	Correlation/cross-section design = 1 point Retrospective design = 2 point Prospective design = 3 point
Theoretical framework	No theory (did not use or build theory) = 0 points Implicit theory = 1 point Explicitly specifies theory or develops theory (qualitative studies) = 2
Sample Size	Small sample (<100) = 1 point Medium sample (>100 and <300) = 2 points Large sample (>300) = 3 points
Age of parents	Not reported = 0 points Reported = 1 point
Ethnicity	Reported as Hispanic or Latino = 1 point Reported by subgroup (Mexican American) = 2 points
Participant Description	Parents = 0 points Reports % mothers = 1 point Focuses solely on mothers = 2 points
Measurement Instrument	Authors developed an instrument to measure parent perceptions or do not give references for instrument development = 1 point Authors used a previously established instrument to measure parent perceptions = 2 points
Data Validity Testing	Not reported = 0 points Reported = 1 point
Data Reliability Testing	Not reported = 0 points Reported = 1 point
Data Analysis	Qualitative (content and thematic analysis) = 1 point Univariate statistics/descriptive = 1 point Bivariate statistics/Analysis of Variance = 2 points Regression/Analysis of Covariance = 3 points Multivariate Statistics = 4 points

Results

The final analysis consisted of 22 articles that met inclusion criteria. These articles represented 16 peer-reviewed journals from varying disciplines, including health education (3 articles), community health (3 articles), public health (1 article), health research (1 article), medical and pediatrics (6 articles), nursing (4 articles), psychology (2 articles), and food and nutrition (2 articles). Eleven of the reviewed studies were qualitative using focus groups, semi-structured interviews, and ethnographic interviews. Five of the studies (22%) explicitly included and only two (9%) implied use of a theoretical framework. Theories addressed within this review included: Social Cognitive Theory, Acculturation Theory, Household Production of Health, Social Ecology, Health Belief Model, and Positivity Bias Theory. All Methodological Quality Scores ranged from 6 to 14 ($M=10$, $SD=2.44$).

Of the 22 reviewed studies, only five focused on the Mexican American community, although two other studies included mostly Mexican American participants. The terminology in this review is consistent with the ethnic classification (i.e., Mexican American, Hispanic, Latino) reported in the original studies. Nine studies were specific to mothers; however, 11 of the 13 parent studies included a sample made up mostly of mothers (84% of sample or greater). The reviewed studies used convenience sampling and recruited participants through local pediatrician offices, Women Infants and Children clinics, Head Start Programs, and referrals.

Parents' knowledge of the causes and consequences of childhood obesity (n=9)

The four studies which examined parents' understanding of the causes of childhood obesity reported that parents believed overweight and obesity were largely caused by genetics and family traits (Crawford et al., 2004; Goodell, Pierce, Bravo, & Ferris, 2008; Reifsnider et al., 2006; Rich et al., 2005). Hispanic parents of preschoolers identified genetics and destiny as a major cause of overweight for some children but poor parenting as a cause of overweight for other children (Goodell, Pierce, Bravo, & Ferris, 2008). Family traits referred to poor parenting and included overfeeding children, making poor food choices, and not having control over a child's eating. Parents did not report engaging in these behaviors but believed other parents made these poor choices.

Parents had limited understanding of the short-term consequences associated with childhood obesity. Consequences of childhood obesity were examined in four (18%) of the reviewed studies (Crawford et al., 2004; Myers & Vargas, 2000; Reifsnider et al., 2006; Rich et al., 2005). In one study, 64% of Hispanic mothers with overweight children reported being familiar with childhood obesity consequences; however, 29% of these mothers were unable to name specific consequences when asked (Rich et al., 2005). In the other three studies the consequences identified included diabetes, asthma, and heart problems (Crawford et al., 2004; Myers & Vargas, 2000; Reifsnider et al., 2006). When Hispanic parents of obese preschoolers were asked to name consequences, 11% of parents identified little energy to play, 3% mentioned low self-esteem, and 1% reported trouble making friends, whereas, 78% mentioned an obese child might develop

heart problems (Myers & Vargas, 2000). These findings suggest parents might be familiar with long-term but not short-term consequences.

Eight (36%) of the reviewed studies specifically investigated the relationship between health and weight (Ariza, Chen, Binns, & Christoffel, 2004; Crawford et al., 2004; Fuentes-Afflick & Hessol, 2008; Gallagher, Gill, & Reifsnider, 2008; Mendelson, 2003a; Reifsnider et al., 2006; Rhee, De Lago, Arscott-Mills, Mehta, & Davis, 2005; Rich et al., 2005). Parents' definition of a healthy child did not frequently include consideration of the child's weight. Parents described a healthy child as a child who was happy, loved, (Crawford et al., 2004), not ill (Rich et al., 2005) well-fed, and who exercised (Gallagher, Gill, & Reifsnider, 2008; Mendelson, 2003a). In a study examining Mexican American mothers' views on obesity, 40% of mothers with overweight children did not identify overweight as a health issue (Ariza, Chen, Binns, & Christoffel, 2004).

When weight was used as an indicator of health, parents were more concerned with the health of skinny children than overweight children. Mexican American mothers were concerned with having thin children because a thin child could become sick and die (Reifsnider et al., 2006). Moreover, in one study, Latina mothers' perceptions of their child's health was affected by the child's body mass index - children with lower body mass indices were rated in fair/poor health whereas children with higher body mass indices were rated as having good/excellent health (Fuentes-Afflick & Hessol, 2008).

Parents' perceptions of appropriate body sizes for children (n=9)

Most studies regarding parent perceptions examined parents' ability to appropriately classify their child's weight as underweight, normal weight or overweight (Akerman, Williams, & Meunier, 2007; Ariza, Chen, Binns, & Christoffel, 2004; Crawford et al., 2004; Fuentes-Afflick & Hessol, 2008; Huang et al., 2007; Intagliata, Gesell, & Barkin, 2008; Myers & Vargas, 2000; Reifsnider et al., 2006; Worobey & Lopez, 2005). The research among the reviewed studies concurred that parents inaccurately perceived their child's weight status. For example, when parents of overweight children were shown pictures of children with varying body sizes and asked to choose the picture that most closely matched their child's body size, only 61% correctly matched their child with a child of a similar weight (Huang et al., 2007). Moreover, only 35% of Hispanic parents with obese children perceived their child was obese (Myers & Vargas, 2000).

In addition to parents of overweight children classifying their child as normal weight, parents of underweight children were equally likely to misclassify their child as normal weight, suggesting a tendency for parents to adjust their perceptions of their child's weight to fit societal norms (Akerman, Williams, & Meunier, 2007). These misclassifications could explain the lack of parental concern regarding their child's weight despite having an overweight child (Cullen, Baranowski, Rittenberry, & Olvera, 2000; Eckstein et al., 2006; Rhee, De Lago, Arscott-Mills, Mehta, & Davis, 2005; Rich et al., 2005).

Two of the reviewed studies examined parent preferences for appropriate body sizes in their children (Reifsnider et al., 2006; Worobey & Lopez, 2005). Both studies suggested parents preferred moderately overweight children. When Mexican American mothers were shown three pictures and asked which child appeared the healthiest, 18% of mothers chose the overweight child and 36% of mothers chose the child at risk for overweight over the normal weight child (Reifsnider et al., 2006). Further, some mothers chose the normal weight child as appearing the healthiest because he was smiling and looked happy rather than his body size. In a separate study, Mexican mothers and White mothers were asked to choose a sketch of the baby body size they preferred; Mexican mothers chose heavier babies whereas White mothers preferred the leaner baby body sizes (Worobey & Lopez, 2005). Mexican mothers seemed to share a preference for a body size that is larger than what is typically considered healthy.

Parents' perceptions of improving their child's health behaviors (n=9)

Five studies (23%) examined parents' perceptions of their role in their child's health (Bellows, Anderson, Gould, & Auld, 2008; Crawford et al., 2004; Cullen, Baranowski, Rittenberry, & Olvera, 2000; Mendelson, 2003a; Styles, Meier, Sutherland, & Campbell, 2007). Mexican American parents believed they had a responsibility to help their children eat a healthy diet (Cullen, Baranowski, Rittenberry, & Olvera, 2000). Further, ethnographic interviews with Mexican American mothers revealed that mothers believed they were responsible for taking care of the health of their families and extended family members; this included ensuring that children ate healthfully

(Mendelson, 2003a). In three studies, parents identified the importance of role modeling healthy behaviors (Bellows, Anderson, Gould, & Auld, 2008; Crawford et al., 2004; Styles, Meier, Sutherland, & Campbell, 2007). However, in these two studies parents also reported feeling inadequate as role models (Styles, Meier, Sutherland, & Campbell, 2007) and unintentionally contributing to their child's inactivity by not being more involved (Bellows, Anderson, Gould, & Auld, 2008).

Three studies assessed parents' beliefs regarding their child's physical activity (Bellows, Anderson, Gould, & Auld, 2008; Eckstein et al., 2006; Gallagher, Gill, & Reifsnider, 2008). Parents believed physical activity was important to their child's health (Bellows, Anderson, Gould, & Auld, 2008; Gallagher, Gill, & Reifsnider, 2008). For example, Mexican American mothers reported physical activity mentally stimulates children during the day and fatigues them for bedtime (Gallagher, Gill, & Reifsnider, 2008). Parents believed they had control over their child's physical activity; however, parents of overweight children reported lower perceived control than parents of normal weight children (Eckstein et al., 2006).

In addition to physical activity, parents valued television (Gallagher, Gill, & Reifsnider, 2008; Lindsay, Sussner, Greaney, & Peterson, 2009; Rich et al., 2005) and believed their children enjoyed watching it (Rich et al., 2005). Moreover, parents who had recently moved to the United States believed television provided a valuable opportunity for their children to learn English and become socialized into the American culture (Gallagher, Gill, & Reifsnider, 2008; Lindsay, Sussner, Greaney, & Peterson, 2009).

Barriers to parent's ability to engage in childhood obesity preventive behaviors (n=7)

Parents identified several barriers to buying, preparing and serving healthy foods (Crawford et al., 2004; Eckstein et al., 2006; Lindsay, Sussner, Greaney, & Peterson, 2009; Mendelson, 2003a; Styles, Meier, Sutherland, & Campbell, 2007). Among these barriers, parents identified time constraints in three studies (Crawford et al., 2004; Lindsay, Sussner, Greaney, & Peterson, 2009; Styles, Meier, Sutherland, & Campbell, 2007), children's preference for fast food in one study (Styles, Meier, Sutherland, & Campbell, 2007), lack of control over the child's diet in three studies (Eckstein et al., 2006; Styles, Meier, Sutherland, & Campbell, 2007), food insecurity in one study (Lindsay, Sussner, Greaney, & Peterson, 2009), and cultural influences over food choices in one study (Mendelson, 2003a). In two studies, parents admitted being confused about nutrition and lacking the knowledge to make healthy decisions for their children (Crawford et al., 2004; Styles, Meier, Sutherland, & Campbell, 2007).

Barriers to physical activity were examined in six (27%) of the reviewed studies. Barriers identified included lack of knowledge regarding appropriate amounts or types of physical activity (Bellows, Anderson, Gould, & Auld, 2008; Styles, Meier, Sutherland, & Campbell, 2007), lack of opportunities, conflicts in family schedules, and cold weather (Lindsay, Sussner, Greaney, & Peterson, 2009). Another barrier included parental concern regarding safety of outdoor parks and facilities where children could engage in physical activity (Bellows, Anderson, Gould, & Auld, 2008; Crawford et al., 2004; Mendelson, 2003a; Rich et al., 2005). In one study, 66% of mothers reported not having a safe playground close to their home (Rich et al., 2005).

The acculturation process presented additional barriers to healthy eating and physical activity (Lindsay, Sussner, Greaney, & Peterson, 2009; Mendelson, 2003a). In one study, Mexican American mothers reported their food choices were highly influenced by their culture, and some mothers believed their culture's traditional foods were high in fat content and caused health problems (Mendelson, 2003a). Further, a separate study identified low social support after moving to the United States as a barrier for engaging in physical activity and preparing healthy meals (Lindsay, Sussner, Greaney, & Peterson, 2009). Recent immigrants believed the American culture was very fast paced, making it difficult to meet new people. The mothers perceived their neighbors as unfriendly, found it difficult to find social support to engage in healthy behaviors, and frequently felt isolated (Lindsay, Sussner, Greaney, & Peterson, 2009).

Discussion

The primary purpose of this systematic literature review was to characterize the literature regarding Mexican American parents' perceptions regarding childhood obesity, current prevention efforts, and their role in prevention. The studies synthesized in this review have provided an invaluable foundation for future and much needed research regarding parental perceptions regarding childhood obesity. The limited number of articles, though, highlights the need for more research in this area.

A secondary purpose of this systematic literature review was to critically assess the current literature regarding parents' perceptions. Although the literature is mostly in agreement on key issues regarding Hispanic parents' perceptions, the methodological quality of the reviewed articles varied. Half of the studies were qualitative and all

quantitative studies employed cross-sectional study designs. Most quantitative studies (55%) presented bivariate correlations, 18% presented descriptive statistics, and 27% presented regression and/or multivariate results. However, the majority of the studies examined relationships between perceptions and children's actual weight status rather than focusing on health behaviors.

Of the studies using a theoretical framework (n=7), no two studies used the same theory. This varied use of theories complicates the process of synthesizing and comparing findings. Further, all of the studies using theory, with the exception of one, were qualitative. Only one study examined the relationships among identified constructs within an explicitly stated theoretical framework (Rhee, De Lago, Arscott-Mills, Mehta, & Davis, 2005).

Categorizing all the studies' findings using the Social Cognitive Theory reveals the paucity of research examining several constructs. Whereas, nine studies examined parents' ability to correctly identify their child's weight status, only four studies asked parents about the causes and consequences of childhood obesity. Only two studies specifically examined parents' roles in their child's nutrition (Cullen, Baranowski, Rittenberry, & Olvera, 2000; Mendelson, 2003a) and three examined parents' roles in physical activity (Bellows, Anderson, Gould, & Auld, 2008; Eckstein et al., 2006; Gallagher, Gill, & Reifsnider, 2008); however, the parents in these studies generally discussed their potential impact and not specifically what they felt responsible for doing. The latter issue might be more informative in why parents choose to engage in preventive health behaviors.

Although all of the reviewed articles included Mexican Americans in their studies, only five focused solely on Mexican Americans. Despite including parents of different Hispanic and Latino subgroups, studies attempted to discuss the role of culture (Arredondo et al., 2006a; Fuentes-Afflick & Hessol, 2008; Lindsay, Sussner, Greaney, & Peterson, 2009). Obesity is culture specific (Clark, 2006). As such, investigating perceptions regarding childhood obesity would be most informative within a homogenous culture, such as the Mexican culture. Future studies should attempt to focus on Hispanic subgroups rather than attempt to generalize cultural characteristics to a heterogeneous Hispanic or Latino population.

Most articles examined parent perceptions, as opposed to solely mothers' perceptions. Most reviewed studies involved at least 84% mothers; however, these findings should not be used to characterize mothers' perceptions. Studies that use both fathers and mothers, along with grandparents and other caretakers of the children, might not be able to focus on what issues mothers, in particular, experience. Mothers tend to be more influential in shaping children's dietary and activity behaviors (Spruijt-Metz, Lindquist, Birch, Fisher, & Goran, 2002). In addition, their parental role and associated issues are likely to be different from those experienced by fathers. Although both perspectives are critical, perhaps they would be best investigated separately. This is especially critical when using focus groups. The men, grandparents and others could change the group dynamics. Also, mothers might not be able to discuss family conflict or experiences unique to their role as a mother in the presence of outsiders. Although other family members might take on the primary role of caregiver, their experiences in

shaping the child's behavior might still differ from those of a mother. Moreover, when studies used questionnaires, results were presented for all parents together, perhaps masking differences between mothers and fathers' unique experiences. Future research might benefit from focusing research on mothers separately.

The third purpose of this review was to make recommendations for future research on parental perceptions of childhood obesity. Although collectively these studies assess mothers' perceptions of childhood obesity, most studies addressed only two to three issues. Research would benefit from more qualitative studies assessing a broader range of issues including mothers' knowledge of the causes and consequences of childhood obesity; perceptions of prevention and their role in prevention; and their identified barriers to engaging in preventive behaviors. Qualitative studies focusing specifically on Mexican American mothers could aid in identifying key issues relevant to mothers' roles in obesity prevention.

An interesting finding among these studies was that parents might not be fully aware of the short-term consequences associated with childhood obesity. Although childhood obesity is associated with long-term consequences, such as heart disease, short-term consequences include stigmatization, low self-esteem, behavioral issues, and atherosclerosis (Ben-Sefer, Ben-Natan, & Ehrenfeld, 2009). Mothers did not seem to be as aware of these consequences in the included studies. If mothers are aware of only long-term consequences of childhood obesity, it is likely childhood obesity information will not be relevant now, but later in the child's life when the risk of long-term consequences is perceived. More research is needed on mothers' perceptions of the

consequences of childhood obesity. The consequences mothers identify and the severity of those consequences might impact their motivation to engage in preventive behaviors. Effective health messages might benefit from raising awareness of short-term consequences among mothers.

The acculturation process seemed to negatively influence health behaviors. As mothers moved to the United States, they would encourage their children to watch television to learn English and become socialized (Gallagher, Gill, & Reifsnider, 2008; Lindsay, Sussner, Greaney, & Peterson, 2009). Alongside encouraging these sedentary behaviors, mothers felt isolated from other people and found it difficult to obtain social support to be physically active or eat healthy (Lindsay, Sussner, Greaney, & Peterson, 2009). The culmination of these acculturation effects might contribute to an overall decline in health promoting behaviors. More qualitative research is needed in this area to understand the underlying psychological factors influencing changes in health behaviors during the acculturation process among Mexican American mothers.

Researchers and practitioners need to further investigate mothers' perceptions regarding childhood obesity, current prevention efforts, and their role in prevention. Due to the limited research in this area, qualitative studies might be especially informative in providing the foundation for future questionnaires. Surveys can subsequently be used to examine relationships of perceptions with preventive behaviors. Mexican American mothers, specifically, have a unique profile that might be informative in understanding their experiences with preventing childhood obesity and how prevention is impacted by

the acculturation process. Lastly, understanding these cultural experiences may better inform much needed culturally tailored programs for Mexican American mothers.

3. MEXICAN AMERICAN MOTHERS' PERCEPTIONS OF CHILDHOOD OBESITY

Mothers are important agents for childhood obesity preventive efforts because they affect their child's weight status both genetically and environmentally. Mothers' body mass indices are among the strongest predictors of a child's body mass index at birth and the rate at which he/she gains weight through the toddler years (Maffeis, Talamini, & Tato, 1998). Due to their parental role as caregiver, mothers have the capacity to shape children's early perceptions and attitudes towards food, eating, and sedentary behaviors. Furthermore, mothers may influence their children's perceptions, attitudes, and receptivity to new foods and activities introduced later in life (Birch & Ventura, 2009). Moreover, mothers continue to play an important role in their children's development throughout late childhood and adolescence (Lindsay, Sussner, Kim, & Gortmaker, 2006).

Despite the impact mothers have on their child's overweight and obesity risk, limited research has focused on mothers' perceptions of childhood obesity (Lindsay, Sussner, Kim, & Gortmaker, 2006). This dearth of research is problematic especially as the few parent-based prevention programs conducted have been highly effective in reducing overweight among children (Lutzer et al., 2009). Understanding maternal perceptions of childhood obesity is critical for identifying areas in which prevention programs might be more effectively tailored toward mothers, especially in at-risk groups.

Mexican American mothers are more likely than non-Hispanic mothers to rear overweight children. In 2004, the overweight prevalence was higher among Mexican American children (37%) than both Non-Hispanic Black children (35%) and Non-Hispanic White children (16%) (Ogden et al., 2006). Moreover, the association between mother-child body mass indices is highest among Mexican American mother-child dyads compared to their non-Hispanic counterparts (Olvera, Sharma, Suminski, Rodríguez, & Power, 2007). National organizations have urged for the examination of race/ethnicity and culture on childhood obesity among minorities, such as Mexican-Americans (Caprio et al., 2008); however, scant research exists.

In addition to examining cross-cultural differences, differences within a culture can provide important information. Mexican Americans, for example, exhibit varying levels of acculturation (the process which involves continuous first-hand contact between two distinct cultural groups resulting in numerous changes in both groups) that are helpful in understanding perception and behavioral differences in groups (Berry, 1989). Changes in the non-dominant group are typically more pronounced, and thus, the primary focus in acculturation research (Berry, 2001). Among Mexican Americans, acculturation provided information regarding differences among mothers' abilities to understand their child's development (Gutierrez, Sameroff, & Karrer, 1988). The mothers' abilities to conceptualize their child's development at a complex level were associated with their level of acculturation.

Due to the limited amount of research on maternal perceptions, naturalistic inquiry was used to assess the mothers' understanding of childhood obesity, its causes,

and the associated consequences of obesity. To classify causes of childhood obesity mothers identified, researchers used a complex model that is versatile enough to classify the varied responses—Social Ecological Model. The Social Ecological Model takes into account varying levels of influence on a child's weight status (see Figure 2).

The Social Ecological model allowed researchers to classify the varied causes identified by mothers. The Social Ecological model assumes that health is influenced by multiple levels of factors (i.e., intrapersonal, interpersonal, organizational, community and public policy) and these factors interact across levels (Glanz, Rimer, & Lewis, 2002). The multiple levels of influence allow a behavior's causes to be discussed at the level of the individual (intrapersonal), the people and interactions among the individual and others (interpersonal), the organizations or groups to which the individual belongs (organizational), and the community characteristics or policy where an individual lives (community and public policy). A social ecological approach to childhood obesity, for example, includes intrapersonal factors (e.g., child genetics and behaviors), interpersonal factors (e.g., parenting, feeding practices), and community level factors (e.g., acculturation).

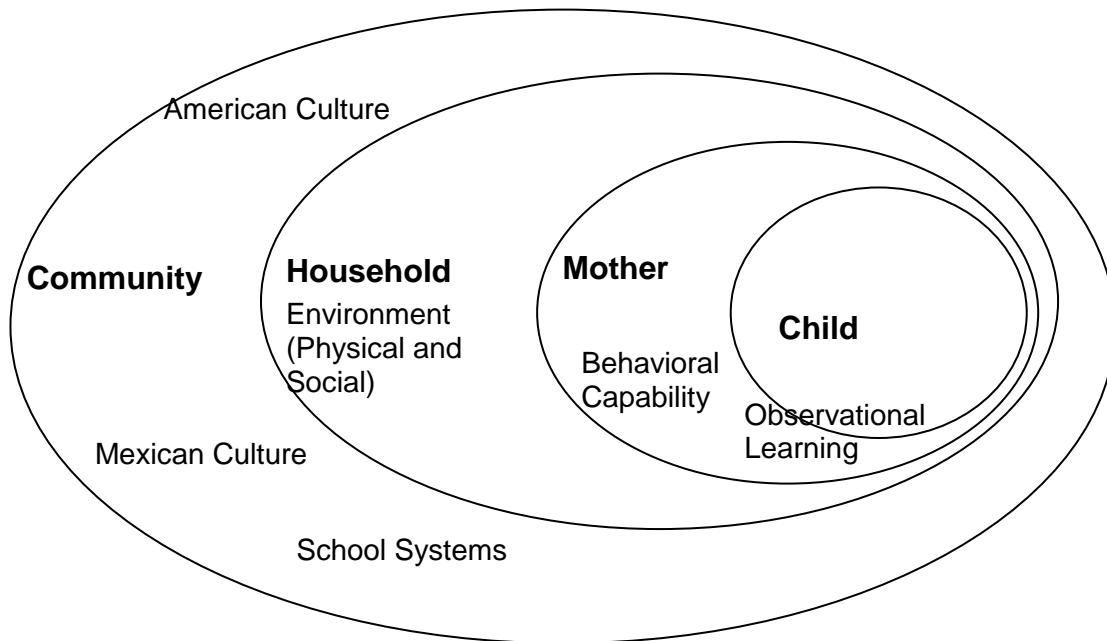


Figure 2. Social Ecological Model of Childhood Obesity.

The purpose of this paper is to examine how Mexican-American mothers perceive childhood obesity. More specifically, this study investigated the beliefs mothers had regarding what causes children to become overweight and how to identify if a child is becoming overweight. Additionally, this paper examined differences in Mexican American mothers' underlying perceptions in regards to childhood obesity prevention across acculturation levels.

Whereas, few studies have asked mothers with overweight children their perceptions of childhood obesity, this study focused on Mexican American mothers regardless of perceived child's weight status. This allowed mothers to talk about all of their children – those that are overweight and those that are not. Mothers were able to talk about the differences between their overweight and non-overweight children's behaviors, thus enabling them to express their understanding of why one or two of their

children were overweight whereas their other children were not. This study used qualitative data from focus groups held with mothers of different acculturation levels (defined as years lived in the United States and language preference).

Methods

Participants were recruited from a Hispanic Health Fair in Bryan, TX in August 2008. The Health Fair coordinators provided free school supplies to all attendees and were able to attract several community members. Research staff attended and provided potential participants with study information. Mothers who were (a) 18 years of age or older, (b) self-identified as Hispanic, lived in Bryan/College Station, TX and (c) had at least one child between 5 to 12 years old living in the same home, were invited to participate in the study.

Interested and eligible participants provided their contact information to research staff. Mothers could also take flyers and study information to either contact the office later or recruit their friends and family to take part in the study. Snowball sampling was used to recruit additional participants. Mothers had the option of participating in either a Spanish or English language focus group and all recruitment information was available in both languages.

Focus groups

Three focus groups were conducted in Bryan, TX between August 9, 2008 and August 30, 2008. A total of 23 mothers attended the focus groups (15 Spanish speakers and 8 English speakers). Average age of the mothers was 32 years old ($SD=5.3$).

Participants in the English group were all born in the United States, and all participants in the Spanish group were born in Mexico and had lived in the United States an average of 9.6 years ($SD=4.6$). Additional sample characteristics are shown in Table 2.

Focus group questions were written in English and translated into Spanish by bilingual and native Spanish speakers. The questions were modified from previous studies (Jain et al., 2001) and assessed mothers' perceptions of: (a) what childhood overweight is, (b) what causes children to be overweight, and (c) associated consequences. Examples of focus group questions included "How do you know a child is healthy?" and "Why do you think some children are overweight and others are not?" Open-ended questions were initially asked and were then followed by probes if more information was deemed necessary.

A doctoral student was trained on focus group procedures and had experience working with bilingual Hispanic populations facilitated focus groups. In addition, two researchers (one doctoral student and one researcher with a PhD in health studies, both trained in focus group methods) took detailed notes of body language and important interactions. Focus groups lasted approximately one and a half hours each and included free child care, a free meal, and refreshments. All focus groups were tape-recorded. Audio recordings of the focus groups were later transcribed for analysis.

Table 2
Mother Characteristics

	English Group (n=8)	Spanish Groups (n=15)
Average Age	28.86 ± 4.78	34.36 ± 4.60
Average Number of Children	3.0 ± .82	3.5 ± 1.19
Marital Status		
Married	7 (88%)	14 (93%)
Separated	0 (0%)	1 (7%)
Single	1 (12%)	0 (0%)
Work Status		
Unemployed	5 (63%)	9 (60%)
Employed Part-time	2 (25%)	4 (27%)
Employed Full-time	1 (12%)	2 (13%)
Household Income		
\$5,000 - \$15,000 per year	0 (0%)	7 (47%)
\$15,001 - \$25,000 per year	1 (12%)	4 (27%)
\$25,001 - \$35,000 per year	1 (12%)	0 (0%)
Over \$35,000 per year	4 (50%)	1 (7%)
Don't know	2 (25%)	0 (0%)
Education Level		
≤ 8 th Grade Education	1 (12%)	6 (40%)
Some High School	1 (12%)	5 (33%)
Completed High School	3 (43%)	2 (13%)
Some College	2 (25%)	2 (13%)
Completed Graduate School	1 (12%)	0 (0%)
Household Composition		
Live with parents	0 (0%)	1 (7%)
Live with grandparents	1 (12%)	0 (0%)
Live with husband	7 (88%)	14 (93%)
Current Health Status		
Excellent	2 (25%)	2 (13%)
Good	4 (50%)	10 (67%)
Fair	2 (25%)	3 (20%)
Poor	0 (0%)	0 (0%)

Focus group analysis

Three researchers (two faculty members and one doctoral student) analyzed the three focus group transcripts in their original language (Spanish or English) to maintain the contextual meaning. Thematic analysis was used to analyze emerging themes in the data. The researchers independently conducted the analysis of each focus group, identified themes and subsequently compared analyses and codes. When discrepancies in analyses occurred, the three researchers met to discuss the differences. Researchers then reached consensus on themes and the resultant analysis reflected revised themes. Throughout the study, researchers used constant comparative processes to restructure themes and codes. Any differences between groups by language were also examined. All results are reported in English with the original quotation following for Spanish quotations, as previously recommended (Lincoln & Gonzalez y Gonzalez, 2008).

Results

Weight and health

When asked about indicators that a child is healthy, mothers mentioned healthy children are those that have vaccinations, adequate sleep, perform well in school and are at a healthy weight. Mothers expected children to be active, and one mother stated children should “have at least one hour of exercise a day.” Other focus group participants agreed with this statement, nodding their heads and giving verbal agreement. If a child is very sedentary, mothers believed this was a sign the child is unhealthy. One mother stated, “Children have to run, jump and yell, (laughs) even though one may get mad (laughs more, other mothers join in laughter). That is what it is [to be] healthy.”

[Originally in Spanish:] “Los niños tienen que correr, brincar, gritar, (Laughs) aunque uno se enoje (other mothers join in laughter). Eso es [estar] saludable.”

A healthy weight was a weight when the child’s weight is “right” or “good” for their height based on the child’s appearance, ability to keep up with other children his/her age, or a clinical evaluation. A pediatrician or clinical evaluation was the most frequently mentioned indicator to determine if a child is at a healthy weight or not (this theme contained 13 data units). A child was at a healthy weight if the pediatrician weighed the child and said he/she was at the right weight. Mothers understood this assessment takes into account a child’s height, weight and age.

Mothers mentioned that many Hispanics think a healthy weight means the child must be chubby, but this is not always the case. A chubby child was generally perceived to be “well-fed.” Mothers discussed how this child could still lack nutrients. Some chubby children are still anemic. The mothers agreed that a chubby child might not necessarily mean the child is healthy or eating a good diet. No mothers mentioned if a child is “chubby”, this could be an indication a child is unhealthy. As one mother stated “you look at a chubby boy and say ‘Oh no, that boy is very healthy.’ That is wrong because a skinny child can be skinny, and well fed.” [Originally in Spanish:] “Lo mira uno gordito y dice ‘Hay no, ese niño es muy sano,’ eso es incorrecto porque, un niño delgado, puede estar delgado, y bien alimentado.”

A few mothers had taken their child to the pediatrician because they were worried about their child’s weight. These mothers had children who they believed were too skinny. One mother said she was concerned because people kept asking if her son

didn't eat. She talked about the time she took him to the pediatrician and "[the pediatrician] said the boy was not anemic, he is not missing calcium, he is not missing iron, the boy is very good. He said, 'you don't need a fat child'. He says, 'Why would you want him overweight? If the boy is fine, he doesn't need other things.'" [Originally in Spanish:] "dice el niño no esta anémico, no le falta calcio, no le falta hierro, el niño esta muy bien, dice usted no necesita un niño gordo, dice, para que lo quiere o pasado de peso? Si el niño esta muy bien, no necesita otra cosa mas."

Consequences of being overweight

Mothers identified physical, social, and emotional consequences that an overweight child might experience. Physical consequences included the overweight child was more likely to get sick or develop diabetes, heart disease, and other chronic conditions. The mothers believed children who are not overweight get these illnesses too. However, overweight children are more likely to get these conditions. Mothers also believed overweight children are less likely to be able to keep up physically with other children in playing games. One mother said "the school says that being overweight, that [the children] can't do much, um, exercise, when they take them out to play and all that, they get tired more quickly, and all." [Originally in Spanish:] "Ya ve que muchos en la escuela dice que están pasado de peso, que no pueden hacer mucho, ejercicio, cuando los sacan a jugar y todo eso, mas rápido se cansan, y todo."

In regards to social consequences, mothers believed overweight children suffer from ridicule at school. They also believed this teasing could cause overweight children to have low self-esteem. Weight could also keep a child from being able to keep up with other children when playing, which could affect the child socially.

Emotional consequences included feeling depressed. One mother expressed concern that her daughter was depressed because her sisters were skinny and she was not. The mother worried that her daughter was becoming depressed about her weight and assured her she would most likely grow out of the weight.

Consequences differed among English and Spanish focus groups. Whereas English speaking mothers spoke primarily about physical consequences of childhood overweight, Spanish speaking mothers equally discussed physical, social and emotional consequences. One of the Spanish focus groups also related weight and health to a child's ability to do well in school; this theme did not emerge in the other groups.

Consequences experienced by mothers

Although mothers began discussing the consequences of childhood obesity, the discussion quickly shifted in all focus groups to the mothers' personal experiences with being overweight. Several mothers confided that they believed they were overweight. However, none of the mothers believed they were obese. Most mothers discussed gaining weight after having their children.

Mothers seemed to appreciate the opportunity to talk about their own struggles with losing weight or the impacts the excess weight had on their lives. One mother discussed her situation:

I always tell my husband like, ‘Do you think I’m fat?’, and he tells me, ‘If you feel fine you are fine, it is about how you feel about your health. We should do exercise, but you shouldn’t feel sad or uncomfortable.

[Originally in Spanish:] Siempre le digo a mi esposo como, ‘Tu crees que yo soy gorda?’ y el me dice, ‘Si tu te sientes bien estas bien es como tu te sientas por las salud. Debemos ser ejercicio, pero no te debes de sentir triste o incomoda.

Other mothers expressed consequences included loss of energy, depression and loss of control over their weight. Mothers said they felt onsets of depression when they would gain weight. Losing weight would lessen the depression but the depression would return if the weight was regained. They also felt their depression led them to eat more and continued the cycle of the overweight.

Overweight signals

Most mothers depended on a child’s appearance and size to know if he/she was becoming overweight. A mother said, “most of the time, you can tell just by looking at them if they are overweight.” Mothers identified an overweight child as a child who wore a clothing size that is for a much older age group. One mother said, “If they’re um, they’re young, and then they’re like they’re wearing clothes that’s like twice for their

age, than it's obvious." However, the mothers also noted that normal-weight children might also wear larger sizes because their height or build. Some children would wear larger clothing sizes because of their height. Other children might naturally be larger and needed bigger sizes.

Mothers identified a child becoming overweight by observing the child's behaviors. When a child constantly ran out of energy, the child might be overweight. Children, who wanted to stay inside and watch television most of the time, were possibly becoming overweight. Finally, if the child was eating more than usual, the child might be gaining weight. One mother said, "Also, you can tell in your grocery bill. If you're buying more (several moms laugh) food everybody's eating more food."

Mothers recognized a clinical assessment as another way to identify if a child was becoming overweight. Some mothers were told by a pediatrician that their child was already overweight. A few mothers said they heard this every time they took their child to the doctor. Mothers understood this assessment took into account the child's age, height and weight. However, mothers did not always depend on this indicator. Mothers believed some children were naturally larger but were still healthy. Moreover, the child's behaviors provided a more valid indication of overweight for the mothers. For example, one mother said "but [my daughter] is very active she runs and everything, so, no, I have never had problems with her. Yes, they tell me ... in the WIC that she is a little overweight, but she is normal, she is, she is good." [Originally in Spanish:] "Pero [mi hija] es muy activa corre y todo, so, no, nunca ha tenido problemas con ella. Si, me dicen tan... en el WIC que esta poquita pasada de peso pero, pero esta normal, esta, esta bien."

The meaning of obesity

Mothers also understood there is a difference between obesity and overweight. Obesity meant that the person had passed the overweight limit. Obesity was understood as when a person has such excessive weight gain he/she developed diseases. When asked what the ‘limits’ were, the mothers explained it was when diseases set in. Further, the mothers discussed family members and adults with obesity but did not discuss obesity as an issue experienced in childhood.

Intrapersonal (child) characteristics as causes of overweight

Genetics

The role of genetics was a very controversial issue among all focus groups. Although all mothers acknowledged that genetics do play a role in a child becoming overweight, there were two distinct opinions. Some mothers felt that genetics was the main predictor of a child’s weight. One mother said “because a lot of times a child sometimes is born chubby because they come from fat parents...or they are born big because their parents also are tall...” Other mothers, however, said they believed genetics was just “an excuse” and most familial similarities could be explained by similar habits. One mother stated,

but a lot of it [being overweight] falls down to, it’s generation after generation of eating too many tortillas (other mother: Uh-hmm) and, and um, (different mother: subtle laugh) eating the food they’re not supposed to be eating, (a third

mother: Yeah) then, if you have generation after generation that are overweight, then you say ‘Oh, it’s because of the genes.’

Specific child behavior was the most mentioned reason for children becoming overweight. Mothers believed children became overweight because of the foods they were eating and the amount of time spent watching television. When siblings behaved similarly yet one child was overweight, mothers credited the weight difference to genetics.

Medical condition

Mothers suggested a medical condition could cause a child to become overweight. The thyroid was presented as an issue that can cause people to gain weight regardless of their diet or physical activity. This theme emerged across both the Spanish and English groups. However, a few mothers in the English group believed the thyroid would be a rare condition and not account for the rapid increase in overweight children. These mothers did say, though, that these medical conditions could be overlooked because of the childhood obesity epidemic. An English-speaking mother said “because we’re getting so big, we overlook, if you have a kid that comes in that’s sick, may have a medical condition, they don’t get seen, they don’t, the doctors may assume, ‘Oh, it’s a Latino kid, he’s just eating too many tortillas.’”

Interpersonal contributors

Feeding practices

Distribution of food was a disciplinary action in many cases. As mothers discussed how they regulate their child's diet, they continuously mentioned allowing the child to have snacks or treats as a reward for the child eating all of their food. Moreover, fast food was also withheld as a punishment. One mother discussed an incident when her son misbehaved. Afterwards, he asked for a children's meal from a fast food restaurant. She said,

I'll still buy it for him and my husband is not like that, my husband is like 'no, he is not gonna get something, you know, he doesn't deserve it' or whatever, and I, my, my husband's strict, you know and we always have arguments and then I, when I, when I'm actually thinking about it, I'm like, you know, he's really right.

Feeding behaviors differed among mothers from different acculturation groups. Mothers from all groups reported having trouble getting their children to eat vegetables. However, there were different methods used to persuade the children to eat vegetables. In the Spanish speaking groups, most mothers believed it was important to bring only healthy foods in the home. Mothers suggested making healthy foods easily accessible for the children to find. As one mother stated,

we know the kids are going to open the fridge or are going to be on the lookout then having like broccoli for them and for them to be provoked by it like we already know our children right, each parent, I think it's more than anything

responsibility of ourselves. [Originally in Spanish:] Sabemos que los niños vana abrir el refrigerador o vana estar al pendiente entonces tenerles como bocadillos sanos y que se les provoque o sea ya conocemos a nuestros hijos verdad, cada padre, yo pienso que es mas que nada responsabilidad de nosotros.

In the English group, the methods used to encourage eating healthfully were more varied. One English-speaking mother discussed her way of getting her son to eat his broccoli. She sent him to bed without dinner when he refused to eat the broccoli. She stated,

and then like it was, it was late, it was like eight thirty at night you know and he was like, 'Mom, can I have some of that broccoli,' and I was like, 'oh, you know, see I got you to eat it,' (Several Um-hmms) and then he, and he ate it. And you know, he wanted a little bit of broccoli with cheese, but hey, I got him to eat broccoli.

Mothers discussed the importance of shopping and bringing home only healthy food. However, they also reported feeling badly whenever their children asked why they did not bring home treats and snacks. One mother stated,

Sometimes, it is basically hard to say no. I think it's one of our responsibilities, but it's hard. Or like when you go to the store, you go shopping, you know, and of course, and um, they want junk food, you know, they want donuts, they want

juices, they want this, you know, that, and sometimes you just feel guilty not to do it.

Regulating a child's food intake was also associated with guilt among English-speaking mothers. English-speaking mothers believed one reason children become overweight is that mothers feed their children too much food. However, they discussed the difficulties of regulating the diet. One mother talked about her overweight son saying,

I don't know like what to do because like when I feed him dinner he wants, 'Mamma I want some more,' I mean you can serve him three times and then when everybody finishes he'll go back and get some more, but I don't know, I feel like sad if I tell him 'No, you can't eat anymore.'

Communication between parent and child

There was a consensus that poor communication can lead to childhood obesity among mothers in the English group. Busy work schedules interfered with not only their ability to cook for the family but also their time to communicate with their children. Mothers expressed guilt over not being able to pay attention to their children all the time. One mother discussed how mothers deal with children when they're asking for attention, saying "I mean how much, how much will it really cost us to, you know, when they're out down there yanking on our leg, 'Momma, Momma, momma, look, look, look.' How much time is it really gonna cost us to look down and say, 'What?'" you know. 'What do you want?' and they say, 'Look' 'oh, okay, thank you' (another mom: Mm-hmm) ...

instead of ‘Go, you know what here, why don’t you take a bag of chips, sit down in front of the television and let me have this little (other mother: Mm-hmm) two minutes that I need.’”

Mothers across all groups expressed the benefits of communicating with the child. When a parent was involved in their child’s life, mothers believed they would be able to detect bad habits earlier. The mothers thought this would help prevention. One mother said if mothers wait and the child became overweight, it would be because “you yourself didn’t call the attention on time didn’t talk with them [the child] when there was time.” [Originally in Spanish:] “No les llamo la atención a tiempo no platico con ellos a tiempo.” Another mother stated “if you know your child’s habits, and you, and if you find out that if one of their habits is not a good habit, you can do, or you can attempt to do whatever you can to change your child’s habits.

Parent supervision

Mothers believed many childhood obesity risk behaviors occurred due to low parental supervision. Parental supervision was low when mothers were working. Mothers stated when the children were at home alone, “they eat whenever they want - three, or four times a day, or more but not the adequate food like you say. Then, when the mom gets home, is when they get rice or beans or vegetables and all that and meanwhile, they got their stomach full with everything else.”

[Originally in Spanish:] “Como usted dice uno trabaja, ellos comen a la hora que quieren. Tres, o cuatro veces al día, o hasta mucho mas pero no la comida adecuada

como usted dice. Entonces, ya cuando llega la mama, es cuando ya les da su arroz o frijoles o su verdura y todo eso y mientras, y se llenaron el estomago con todo lo de mas.”

Household characteristics

Mothers identified children’s diets as mostly the mother’s responsibility. Mothers stated that parents should be responsible for what foods they bring into the home and are therefore made available to the children. They also noted that it was their responsibility to make sure their children were not watching television or playing video games for too long. They believed availability of unhealthy foods and video games made children more susceptible to becoming overweight.

Cultural factors

Mothers believed the Hispanic or Mexican American culture (used interchangeably by the mothers) contributed toward their children becoming overweight. Several mothers believed most Hispanics thought chubby children are cute. A few mothers agreed chubby babies are cute, although they recognized why this belief can be hazardous to a child’s health. One mother said, “when you see a, you know, a chunky baby, when they’re little you’re like, ‘Oh, my gosh he’s so cute, I wish my baby was so chunky,’ but not really understanding, you know, that they’re gonna have a lot of health problems when they grow up.”

Mothers also believed the Mexican diet was a major cause for children becoming overweight. Mothers stated that many of the foods associated with the Mexican culture were high in fat and mother disclosed that they use large quantities of salt and oils in the foods they prepare. Mothers also identified breads and sodas as part of the Mexican diet. However, they also expressed resistance to preparing or eating non-ethnic foods (except fast food).

Discussion

This study aimed to understand Mexican American mothers' perceptions of childhood obesity and its causes. Mothers across all focus groups heard about the childhood weight problems throughout the nation. The mothers identified physical, social, and emotional consequences of children being overweight. Moreover, the mothers associated weight status with a child's health.

The pediatrician and clinical assessments were the most frequently mentioned way to distinguish between a child who is at a healthy weight and a child who is overweight. Pediatrician assessments helped alleviate mothers' worries about their children's thinness. However, the mothers did not depend on these assessments when pediatricians identified their children as overweight. Overweight assessments were not considered as important as child behaviors. This finding supports previous research that suggests mothers were not concerned about their children's weight if the child was active and had a good appetite (Dalton & Watts, 2002).

Mothers' tendency to worry about their child's thinness but not about their child's overweight is an interesting finding. Although mothers recognized that

chubbiness does not mean the child has all the needed nutrients, they still were fearful that their skinny children might be unhealthy. Despite the knowledge that childhood obesity is a nationwide issue, mothers might still be more attentive to signs of thinness in their child as indicators of an unhealthy weight than signs of overweight.

Mothers believed an overweight child could be identified based on the child's appearance. Previous research suggests mothers have inaccurate perceptions of their children's weight, failing to recognize overweight among their children (Akerman, Williams, & Meunier, 2007; Carnell, Edwards, Croker, Boniface, & Wardle, 2005; Eckstein et al., 2006; Killion, Hughes, Wendt, Pease, & Nicklas, 2006). This inaccuracy was especially evident among minority mothers (Killion, Hughes, Wendt, Pease, & Nicklas, 2006). As children age, mothers' perceptions of the children's body sizes tend to become more negative (Striegel-Moore & Kearney-Cooke, 1994). A few mothers mentioned that only their eldest children were overweight, which might represent a bias to evaluate the older children's weight status more critically. However, because the actual children's weights were not measured, the accuracy of these perceptions is uncertain. Mothers' dependence on their visual perceptions of their children's weight status, especially younger children, might lead to delay in identifying and treating overweight and obese children.

When discussing causes of children becoming overweight, mothers identified how parenting behaviors (e.g., feeding practices and shopping) play a role. Despite expressing a need to regulate the amount of food children eat and limiting the purchase of unhealthy treats, English-speaking mothers felt these behaviors made them feel badly

or guilty. This is troublesome because mothers of overweight children allowed this guilt to affect their behaviors. Limited research exists in this area. More research should be done to examine these feelings of guilt among Mexican American mothers born in the United States.

English-speaking mothers were more likely to use varied feeding practices. Research suggests when food is restricted, it becomes more appealing to young children (Birch & Ventura, 2009). Moreover, when food is forced upon children, the food becomes more aversive to the children (Batsell, Brown, Ansfield, & Paschall, 2002). More acculturated children are more likely to eat food high in fat and sugar than are their less acculturated counterparts (Caprio et al., 2008). Possible differences in feeding practices among mothers from different acculturation levels could account for some variance in childhood diets. More research on feeding differences among mothers from varying acculturation levels is needed.

Obesity was not discussed as a childhood issue. Mothers primarily defined obesity as an adult issue when an adult passed the overweight limit and contracted a disease or condition. Obesity is typically used among media, researchers, and clinicians to define children over the 95% percentile for their age, sex, and height; however, clinicians are advised to report weight status to parents and children in this weight range as “overweight” and avoid using the term ‘obese’ which can be interpreted negatively (Dalton & Watts, 2002). Although childhood obesity and childhood overweight are still used interchangeably, there is scant research on how parents understand each of these terms. Although mothers in this study understood obesity as being a more critical issue

compared to overweight, their lack of associating obesity with children might reflect an overall lack of immediate urgency associated with child overweight status. More research needs to be done in this area to further understand mothers' perceptions of these terms, especially among at-risk groups.

The results of this study should be interpreted within the limitations of the study. A convenience sample was used for this study. The mothers were recruited through a Hispanic health fair and snowball procedures. It is possible these women were interested in health-related issues prior to the study. Also, mothers who felt knowledgeable or concerned with family health issues might have been more likely to participate in this study, limiting us from gaining a more accurate view of maternal views.

Mothers of at-risk children are especially vital to understanding the childhood obesity epidemic. Moreover, these mothers' understanding of the childhood obesity epidemic provides important insights into issues to research and address in prevention programs (e.g., effective terminology, cultural factors, emotions associated with feeding practices, the role of food as a reward and punishment). This study contributes to the dearth of research on Mexican American mothers' perceptions of childhood obesity. Considering the important role Mexican American mothers' play in their child's weight status, continued research needs to involve these key informants.

4. MEXICAN AMERICAN MOTHERS' PERCEPTIONS OF THEIR ROLE IN CHILDHOOD OBESITY PREVENTION: A QUALITATIVE STUDY

Despite myriad preventive efforts, childhood obesity rates continue to increase dramatically in the United States. Over the last 30 years, obesity among children 2-5 years old increased from 5.0% to 13.9% (Ogden, Flegal, Carroll, & Johnson, 2002). Currently, over 25% of U.S. children are overweight or at risk of becoming overweight (Ogden, Flegal, Carroll, & Johnson, 2002), with childhood obesity prevalence rates in the United States being among the highest of any industrialized country in the world (Lobstein & Jackson-Leach, 2007).

The alarming obesity trends in the United States disproportionately affect Hispanic children. In 2003, Hispanic children had an overweight prevalence rate of 21.8% as compared to only 12.3% among Caucasian children (Kant, 2003). Moreover, the overweight prevalence among Mexican American children (the largest Hispanic subgroup) was approximately 37% in 2004, higher than both Non-Hispanic Black children (35%) and Non-Hispanic White children (16%) (Ogden et al., 2006). Due to these obesity disparities, Shaping America's Health and the Obesity Society recently issued a consensus statement encouraging the examination of race, ethnicity and culture in obesity research (Caprio et al., 2008).

Regarding childhood obesity prevention, although an abundance of literature exists on school-based programs, scant research examines family-based prevention. Home environment may be a factor leading to childhood obesity. A paucity of research

and prevention efforts – less than three percent - target the home in regards to childhood obesity (Flynn et al., 2006), despite available research identifying the influence of the home environment on children's health behaviors (Bowman & Harris, 2003; Gable & Lutz, 2000; Gibson et al., 2007; Patterson et al., 1997; Strauss & Knight, 1999).

Home is typically where children first learn normative behaviors, including health-related ones, which are highly influential toward risk of being overweight (O'Brien et al., 2007). Within the home, children develop a sense of appropriate eating times, acceptable eating behaviors, and attitudes towards food (Birch & Ventura, 2009). These learned behaviors and perceptions in the home, in turn, affect the way children perceive and behave in new situations presented outside the home.

Parents play a critical role in shaping the home environment. Parents control what foods are available in the home, which, in turn, vitally impacts a child's dietary preference throughout his/her life (Jahnke & Warschburger, 2008). The amount of household television time parents allow is also associated with childhood obesity risk (Ariza, Chen, Binns, & Christoffel, 2004). Moreover, Latzer suggests that obesity interventions targeting the parents, rather than solely the child, might provide longer lasting behavioral maintenance (Latzer et al., 2009).

Although fathers also play a critical role, research suggests mothers are more influential in shaping children's early eating habits (Rollins, Francis, & BeLue, 2007), physical activity (Birch & Davison, 2001), and subsequently child weight status. Mothers are also important role models for encouraging physical activity (Rollins, Francis, & BeLue, 2007). Due to the important influence of mothers and their parenting

practices on their children's health-related behaviors (O'Brien et al., 2007), researchers need to understand the role mothers perceive they have in their households and in facilitating childhood obesity preventive behaviors at home.

Even though research implies that mothers are instrumental players in the prevention of childhood obesity, if mothers are unable to perceive this responsibility, prevention efforts targeting mothers will naturally be unsuccessful. How mothers perceive their roles in childhood obesity prevention is unknown. Additionally, the impact of how the child's entrance into the school system influences this perceived role is also uncertain.

Few studies have examined mothers' perceptions of childhood obesity (Hackie & Bowles, 2007; McGarvey et al., 2006; Rich et al., 2005). The limited amount of research available involving parents, has focused on perceived consequences of childhood obesity, suggesting long-term consequences were not well-known (Baughcum, Chamberlin, Deeks, Powers, & Whitaker, 2000) and maternal perceptions of the child's body size, demonstrating mothers were unable to recognize when their children were overweight (Killion, Hughes, Wendt, Pease, & Nicklas, 2006). Moreover, these studies have focused on mothers of overweight children, limiting the ability to compare responses against those from mothers of normal weight children.

Although children of Mexican descent are at a higher risk of becoming obese than non-Hispanic Whites, it is unclear which factors place this group at increased risk. Acculturation may be an important factor. Acculturation is the process which involves "continuous first-hand contact between two distinct cultural groups (non-dominant group

and dominant or majority group), resulting in numerous changes in both groups” (Berry, 1989). As women are more acculturated and live in the United States longer, they report eating less nutrient dense and higher fat diets than their less acculturated counterparts (Akan & Grilo, 1995; Arredondo, Elder, Ayala, Slymen, & Campbell, 2006b; Ball & Kenardy, 2002; Hoke, Timmerman, & Robbins, 2006; Whitlock, Williams, Gold, Smith, & Shipman, 2005). Among children, fruit and vegetable consumption is lower and sugar intake is higher among more acculturated third generation as compared to less acculturated first generation Mexican Americans (Caprio et al., 2008). Due to the lack of clarity in how acculturation influences health behaviors, it is difficult to address acculturation impact in childhood obesity prevention.

A paucity of research exists examining the mother’s perceived role or associated behaviors in preventing childhood obesity within the home, especially among Mexican American mothers who are at high-risk for rearing obese children. Moreover, research has not investigated how acculturation influences these perceptions. This research is, however, a critical step in developing educational programs culturally tailored to Mexican American mothers, as an effort to minimize the childhood epidemic in the U.S.

The intent of this paper is to: (1) describe Mexican American mothers’ perceptions regarding their roles in preventing childhood obesity, and (2) understand the barriers to mothers preventing childhood obesity in their homes.

Understanding how Mexican American mothers perceive their role in childhood obesity prevention is critical. In this qualitative study, focus groups were used to elicit

mothers' perceptions of the role they played in childhood obesity prevention. Next, mothers discussed the associated barriers with fulfilling those roles

Methods

This qualitative study employed focus groups. Research staff attended a Hispanic Health Fair in Bryan, TX in early August 2008 to recruit focus groups. The Health Fair coordinators provided free school supplies to all community members attending the fair. Researchers set up an information table at the fair. Staff members presented potential participants with information on the research study, inclusion criteria, possible dates, and locations of focus groups. Inclusion criteria included Hispanic mothers who were: (1) 18 years old and older, (2) lived in Bryan/College Station, TX and (3) had at least one child between 5 to 12 years of age who lived in the same home.

Hispanic mothers who were eligible provided their contact information to research staff. Researchers contacted the mothers to confirm focus group dates and locations. Mothers also had the option of taking flyers, if they preferred, to contact the office to sign up for the study or recruit other eligible mothers to participate. Potential participants had the option of participating in either a Spanish or English language focus group and all recruitment information was available in both languages. All materials and procedures were reviewed and approved by the Institutional Review Board at Texas A&M University.

Focus groups

Three focus groups took place in Bryan, TX between August 9, 2008 and August 30, 2008. Focus groups were comprised of 23 mothers (15 Spanish speakers and 8 English speakers). Average age of the mothers was 32 years old ($SD = 5.3$). Participants in the English group were all born in the United States, and all participants in the Spanish group were born in Mexico with an average of 9.6 years ($SD = 4.6$) lived in the United States.

Researchers wrote focus group questions in English and bilingual and native Spanish speakers translated focus group questions into Spanish. The questions were modified from previous studies (Jain et al., 2001) and assessed mothers' perceptions of childhood obesity, causes, and mothers' roles in childhood obesity prevention. Examples of focus group questions included "Why do you think some children are overweight and others are not?" and "What can you do to prevent your child from becoming overweight?"

These open-ended questions were followed by probes, when necessary, to gather additional information. Focus groups were facilitated by Hispanic females who had prior experience working with bilingual Mexican American participants and were trained on focus group procedures. Focus groups lasted approximately one and a half hours each and included free babysitting, a free meal, and refreshments. Researchers transcribed audio recordings for analysis. All participants received \$20.00 compensation for their time in the form of gift cards to a well-known store.

Analysis

Researchers analyzed the three focus groups in their original language (Spanish or English) to maintain the contextual meaning. Thematic analysis of transcripts allowed researchers to analyze emerging themes in the data. Three researchers independently identified themes and subsequently compared analyses and codes. When discrepancies in analyses occurred, the three researchers met to discuss the differences. Researchers reached consensus on themes and the resultant analysis reflected revised themes. Researchers used constant comparative processes to restructure themes and codes throughout the analysis.

Results

The main objective of this study was to determine Mexican American mothers' perceived roles in preventing childhood obesity. Mothers' beliefs substantiated the theory that mothers play an intricate role in childhood obesity prevention. Further, they identified mothers as traditionally more responsible than fathers, for the child's health. They believed this responsibility included: a) making sure their children were up to date on their shots, b) had a consistent bedtime, c) were physically active, d) were well-fed, and e) ate healthy foods.

The mothers also expressed responsibility for keeping their children at a healthy weight. Mothers acknowledged several things they could do to keep their children from becoming overweight and identified associated barriers. Through thematic analysis, six main themes emerged – home habits, nutrition, exercise, social support, role modeling, and barriers.

Home habits

Mexican American mothers believed home habits were influential on a child's weight status. Home habits consisted of customs the family shared in the home, such as sharing set mealtimes, eating several meals in a day instead of just one, and regulating appropriate situations to engage in eating. For example, eating in front of the television was a home habit mothers did not condone.

Mothers believed setting regular mealtimes allowed themselves to regulate what their children were eating. They also believed when mealtimes were consistent, their children's bodies would get used to the eating patterns and their metabolisms would be better than if the mealtimes were inconsistent. Mothers expected mealtimes to take place at the dinner table and not in front of the television.

Although mothers stated their children enjoy eating while watching television, the mothers believed this behavior was a major contributor to childhood obesity. Mothers also expressed concern that watching television distracted the child from how much he/she was eating. Moreover, the child developed the habit of needing something to eat every time he/she was watching television. Mothers believed their children associated television watching with eating and would watch more television when they had food with them as they watched. To circumvent this, some mothers suggested prohibiting food while children watched television to reduce television viewing under the assumption that a hungry child would have to get up and get something to eat. Thus, a break in the child's attention from the television program or video games reduced the

likelihood that the child would sit back down to keep watching or playing. This topic had an average of 6 comments per focus group.

Nutritional content

Concerning nutritional content, mothers discussed the difficulty of trying to get their children to eat vegetables, as most of their children resisted trying new vegetables. Mothers stated it was much easier to get their children to eat healthy foods if they started feeding them vegetables from the very beginning. One method of doing this was to give the child frozen vegetables to chew on when they were teething. By exposing the child to vegetables early in life, mothers believed children were more open to eating vegetables later in life. As this discussion progressed, a few mothers reported how they “failed in that aspect” and were not able to provide alternative strategies to encourage vegetable consumption now.

If the children were not exposed to vegetables at an early age, many mothers believed strong proactive strategies were needed to encourage current vegetable consumption. Some mothers suggested only having fruits and vegetables in the home as snacks. One mother said “[I] put them uh, a plate on the table, of carrots, the babies, carrots, with ranch, and they are running there, the three of them, and wow how they run those kids in the whole house, and the plate is there, it provokes them to get one, and later another, and after two hours I return and the plate is clean.” [Originally in Spanish:] También me ha funcionado mucho, este, ponerles eh, un plato en la mesa, de ‘carrots’, las ‘babies’, ‘carrots’, con ‘ranch’, y andan córrele para allá son tres, y hijole como

corren estos niños el toda la casa, y está el plato allí, les provoca agarra uno, y ya le provoca a la otra, luego la otra, total que a las dos horas que regreso yo, el plato está limpio.”

Exercise

For the most part, the mothers felt responsible for getting their children to watch less television and be more physically active. They knew that their children enjoyed video games and being in front of the television. However, they were aware that they had the power to prevent their children from watching excessive amounts of television, which they believed contributed to childhood overweight. Some mothers suggested not buying video games for the children because they believed these were the main reasons children chose to sit in front of the television instead of playing outside.

Social support

Several mothers also recommended that exercise plans could be more effective if the whole family became involved. They believed their support for their children enabled the children to engage in healthy behaviors such as playing at the park. This also reduced the fear that their children would get hurt if they went to go play outside by themselves. One mother talked about how her two sons played soccer. She mentioned how they motivated her to be active “because they say, ‘ma, you also play,’ we made a team of moms of the kids and now I am in that, playing.” [Originally in Spanish:] Ahora, pues yo ya para, porque ellos me decían,”Ma, tu también juega,” hicimos un equipo de

las mamás de los niños y ahora también ando en eso, jugando.

Role modeling

Mothers viewed themselves as role models for their children. By setting an example, mothers believed they were responsible for showing their children how to eat healthy and be physically active. In the focus group, all mothers quickly acknowledged their responsibility to be good role models for their children. Several noted that children would be less likely to listen to the mothers' advice if the mothers were not modeling the behavior. One mother stated,

but, there are times that one, as a parent, doesn't do it, or just wants the kids to do it. And, then, the kids themselves tell us, the children tell us 'Mom, and why don't you eat that? (Other mother interjects: Let's see you eat that) Why don't you do that much exercise like I do? So, what is it?' (Other mother: Also) One has to set the example so that they can follow it, because if not, no."

[Originally in Spanish:] Pero, hay veces, que uno de padre no lo hace, o no más quiere que los niños lo hagan. Y, luego, los niños mismos nos dicen, los hijos mismos nos dicen a uno '¿Mom, y tú porque no comes eso? (Other mother: ¿Haber, tu come te eso?) ¿Porque tu no haces tanto ejercicio como yo? ¿So, que es? {Other mother: También} uno tiene que poner el ejemplo para que ellos lo sigan, porque si no, no.

Furthermore, mothers also recognized the negative effects of role modeling

undesired behaviors. For example, one mother described her conflict when trying to get her child not to eat in front of the television. The mother stated “the kids watch and ask why their dad eats in the living room {Several moms laugh} and I have them [eating at] the table and, they want to go with their dad, so that is why one as a parent has the blame because we do that, (M6: Give a bad example) yes (mm-hmm).” [Originally in Spanish:] “Como ellos miran lo mismo porque también así esta mi esposo todo quiere en la sala, y los niños miran y dicen porque mi papa come en la sala {Several moms laugh} y yo los tengo en la mesa y, ellos se quieren ir con su papa, so por eso también uno de padre tiene la culpa porque hacemos lo que, (M6: De lo mal ejemplo) si (mm-hmm).”

Barriers

By attempting to promote healthier behaviors, the mothers also acknowledged experiencing barriers along the way. As the discussions progressed, mothers expressed awareness of their actions’ effects on their children’s behaviors. A few mothers communicated guilt for engaging in behaviors they now believed negatively influenced their child’s dietary and activity patterns whereas other mothers were very objective in identifying barriers to their role.

Although mothers believed they were very influential in outlining home habits for the family, enforcing those guidelines was problematic. Mothers identified it was their responsibility to set a regularly scheduled eating time for their families. However, the father’s work schedule was a barrier. Many times the family dinnertime was scheduled around the father’s varying work schedule. In some cases, the father always

worked late. Although the family found it acceptable to eat without the father, they also believed when the father got home from work, the family was responsible for keeping him company so as not to make him eat by himself. This caused family members to eat or snack while sitting at the dinner table with him.

A mother's work schedule could also pose as a barrier. A single mother explained how her work schedule during the day prohibited her from staying home with her daughter when her daughter was on vacation. She would instruct her daughter to stay in the house the whole day. During vacations, the mother noticed her daughter would gain weight. The mother said her daughter would get antsy and want to keep eating the whole day. She was not worried though because she believed her daughter would lose the weight once she returned to school.

Mothers found it difficult to participate with their children in outdoor activities. A few mothers blamed themselves for sometimes being lazy. However, the heat was another important barrier. During the summer, the mothers found it difficult to spend time outside with their children. Moreover, children were easier to supervise and less likely to get hurt if they stayed inside watching television than playing outside.

The grandparents were also identified as barriers to the mothers' preventive efforts. Grandparents were very concerned with having grandchildren who did not "have enough meat on their bones." One mother spoke about an incident at her mother's home when her son tried to grab a soda from the refrigerator. She stated that as she stopped him from grabbing the soda her mother intervened saying "See, that's the reason why he's not, that's why, that's the reason why he doesn't have any meat on him on his

bones, it's because you don't let him drink sodas.” Many mothers had trouble in monitoring children's eating in the presence of grandparents. Several mothers in the English group identified child-eating habits as one of the main arguments they have with their parents. However, the disagreements were resolved when the parents yielded to the grandparents' suggestions.

Schools could also be barriers to ensuring the children were eating healthy. Several mothers believed the school lunches provided and snacks at school were contributing to the increase in childhood obesity. They found it difficult to prevent their children from becoming overweight considering the poor-quality food provided at school. They believed, though, that by developing healthy eating habits in the home, the children were more resistant to the hot dogs and other unhealthy foods served in the school cafeterias.

Emotional ties to the food and feeding practices were barriers in preventing childhood obesity. Although the mothers expressed no concerns with limiting television time or sedentary behaviors, they had difficulty with limiting food consumption. Their compassion to take care of their children made it very difficult for them not to provide another serving for an overweight child, despite the fact he/she might already have had two servings. Moreover, the fear that their child was not eating enough was stronger than the fear that their child was overeating.

The mothers in every group brought up the cultural influence on body image. Many mothers agreed that Hispanic mothers think chubby children are cute and healthy. The mothers expressed an understanding that this is not always the case. However, the

mothers also mentioned spending more time worrying about having unhealthy skinny children than unhealthy overweight children. They also described numerous situations where other Hispanics would question what was wrong with their skinny children. This often made the mothers worry or take the child to the pediatrician to be assured he/she was healthy.

The mothers identified overfeeding occurs due to Hispanic mothers' insistence on children eating all of the food they are served. The mothers related this need to eat everything in relation to socioeconomic status. One mother expressed her views when it comes to eating out with her children. She said "because we go out to a buffet and I'm like, you know, I'm gonna, give you all this, but you need to eat all of it and if you don't eat it, (other mother: Hmm) you know, then, this is gonna happen, you know, and I think that's one of our problems (other mother: I'm paying for you, I'm not paying for nothing; {laughs} Yeah, that's what I say, I'm like, 'I didn't pay this much for you not to eat' (other mother: You gotta eat twice)."

In addition, mothers identified the Mexican diet as very unhealthy for their children. They believed the large amounts of salt, oil and bread in Mexican dishes alongside sodas was contributing to the increase in overweight children. Mothers stated they were trying to make healthier dishes; however, they also stated their work schedules made the time needed to cook a major barrier to cooking for the family.

Several mothers explained that Mexican food is an important part of all social events in the Mexican culture. The English-speaking mothers believed healthier and non-Mexican food was culturally unacceptable at family or social functions. These

mothers stated if they attended a wedding with non-traditional food or health food, they would only “eat a little bit and then you go eat somewhere else, you go home, or you go to a restaurant after that wedding.”

Finally, mothers in the Spanish speaking groups believed a lack of access to programs was a major barrier. Most programs were only available in English. Most mothers believed there might be a few programs offered in Spanish but they were not aware of any and did not believe the programs would be something they would be able to attend.

Discussion

Overall, the mothers seemed to have a general understanding in how they could help prevent childhood obesity. They ultimately felt responsible for their child’s health and weight status. However, they were also very quick to identify the associated barriers with promoting health behaviors within the home.

Mothers who fed their children vegetables when the children were infants said their children enjoyed these vegetables. Research suggests the best time to impact children’s diets is during the first four months (Birch & Ventura, 2009). However, for the mothers of older children, there has been very little effort to explain how mothers can shape and affect these eating habits. Several mothers reported not being equipped with the tools necessary to have positive influences on their child’s diet past infancy. Although research suggests children are more likely to both try and accept new foods if they are repeatedly exposed to the food, mothers might not understand how to shape children’s diets after they become toddlers. A few mothers believed they needed to force

their children to eat vegetables; however, studies have shown this can have the reverse effect by making the foods aversive to the child (Batsell, Brown, Ansfield, & Paschall, 2002).

More research is needed to investigate the maternal views on the roles of schools in childhood obesity prevention. A few mothers saw the schools as negatively influencing their children by providing hot dogs and other unhealthy food to the children. Although this was not a major theme in our analysis, it is likely that other mothers might share similar feelings. With the few parent and community programs being subcomponents of school-based programs, this view of schools as endangering children's health becomes a significant barrier in the effectiveness of these school-driven efforts.

The grandparents and cultural views of a "healthy" body size conflicted at times with the mothers' views by preferring a larger body size. When views were contrary, the mother would worry, take the child to the doctor, or follow other people's advice despite her own views. This finding is consistent with previous findings that mothers (not only Hispanic) will not treat their overweight child if their family, culture or society believe the child is too small (Goodell, Pierce, Bravo, & Ferris, 2008). In addition, although friends and family members openly expressed concern about a child's thinness, no mothers in our focus groups had family members or friends who were concerned that their child was overweight. This occurred even when the pediatrician told the mothers their child was indeed overweight.

The emotional factors associated with limiting food were discussed in all focus

groups. Food has an emotional component not only in the mother's life but in the diets they shape for their children. Regulating food consumption and restricting treats can be emotional for some mothers. More research should examine mothers' perceptions of the emotional impacts associated with regulating their children's diets.

A primary barrier, in limiting Spanish-speaking mothers from participating in programs designed for their children's health, was access. Currently, there is a need for programs to not only be linguistically but culturally tailored to these at risk groups. Programs aimed at high-risk groups provide the most effective interventions for these populations (Ebbeling, Pawlak, & Ludwig, 2002). Moreover, programs aimed at Mexican American mothers need to be provided in locations that are accessible to mothers with limited transportation and childcare services.

The findings of this study are subject to limitations. As with most qualitative studies, the number of participants was relatively small, especially for the English-speaking mothers. The inclusion criteria were very specific at targeting traditionally under-represented segments of the population. Although these segments of the population are very difficult to recruit for research studies, the data provided was very informative and allowed an under-represented segment and at-risk population to provide their feedback and thoughts on their role in childhood obesity prevention.

Although Mexican American mothers might have the best intentions to prevent childhood obesity among their children, numerous barriers need to be addressed. As obesity prevention programs focus on systemic interventions, education is imperative for mothers to address barriers and manage health behaviors within the home despite

adverse circumstances. More research on maternal views of childhood obesity is needed. This study contributes to the limited research on Mexican American mothers' views of childhood obesity prevention and associated barriers. Mothers can be the catalysts to obesity prevention, but programs need to provide these mothers with the education, skill set, and opportunities to make these differences.

5. SUMMARY AND CONCLUSIONS

Mothers influence their child's development and maintenance of health-related behaviors (O'Brien et al., 2007), and are therefore ideal change agents in the prevention of childhood obesity. Mothers shape their children's early eating habits (Rollins, Francis, & BeLue, 2007), physical activity (Birch & Davison, 2001), and subsequent weight status. Despite evidence of mothers' effects on children's eating behaviors and physical activity (Rollins, Francis, & BeLue, 2007), it is unclear if mothers perceive they influence children's dietary choices, physical activity and health. Although mothers are in a unique position to positively influence their child's behaviors and prevent childhood obesity, limited research examines how mothers perceive childhood obesity, prevention and their role in prevention.

Section two presents a systematic literature review focusing on Mexican American mothers' perceptions of childhood obesity and prevention. The aims of this study were to assess the research regarding parents' perceptions of childhood obesity, prevention and their role in prevention, critically evaluate the methodology of the research, and provide recommendations for future research.

The qualities of most studies were fair to moderate, with MQS ranging from 6 to 14, out of 21 ($M=10$, $SD=2.44$). The majority of studies (78%) lacked a theoretical framework and did not relate their findings back to theory. Among the studies using a theoretical framework, no two studies used the same theory. The considerable methodological variation in this limited area of research complicated synthesizing the

findings. Moreover, most studies did not examine the same specific areas or replicate previous research despite similar studies in the area. Recommendations for future research derived from this systematic literature review included: (a) using a homogenous Hispanic subgroup if considering cultural influence on perceptions of obesity, (b) narrow scope to only mothers because they tend to be the primary caregiver and are likely to experience the impacts of taking care of a child differently than fathers or other family members, (c) investigate perceptions qualitatively to allow researchers to investigate some of the underlying factors influencing these perceptions, and (d) include a wider scope of perceptions regarding different areas of childhood obesity.

Section three was a qualitative examination of mothers' perceptions regarding childhood obesity. The study focused on understanding how Mexican American mothers perceive childhood obesity, the causes, consequences and overweight status. Using a Social Ecological Model adapted to childhood obesity, the study examined causes of childhood obesity at different levels of influence – intrapersonal, interpersonal, and community.

Mothers' views regarding childhood obesity differed from the clinical meanings of childhood obesity. Obesity was identified as an adult issue by the mothers. Mothers were more aware of the health risks associated with having underweight children rather than overweight children. Lastly, mothers identified overweight children as those who are suffering from consequences.

Mothers' varied in their understanding of causes of childhood obesity. Whereas they identified several causes (e.g., child behaviors, parenting practices, cultural

influence), some mothers believed sometimes children are overweight solely based on their genetics. Mothers more strongly believed genetics was the cause of overweight among children when only one or two of their children were overweight.

Section four included a closer examination into the role of Mexican American mothers in preventing their children from becoming overweight. A narrative inquiry approach was used to qualitatively investigate mothers' perceptions. The mothers in the focus groups discussed their child's weight status, their role in prevention and the barriers they faced in carrying out preventive behaviors.

The mothers suggested several ways mothers could prevent childhood obesity and overweight among their children. Mothers felt that they were mostly responsible for their child's weight and health status. However, fathers, grandparents and schools could unintentionally counter mothers' efforts to encourage healthful behaviors. Mothers identified a lack of ability to speak English, feelings of guilt associated with limiting food intake, and a lack of knowledge and skills as impediments in carrying out obesity preventive behaviors within the home.

Each section of this dissertation systematically investigates Mexican American mothers' perceptions of childhood obesity and their role in prevention. First, the systematic literature review assessed the scope, discrepancies and shortcomings in this area of research. This review produced four specific recommendations for future research. These four recommendations, subsequently, informed the next two manuscripts. The second manuscript (section three) qualitatively investigated Mexican American mothers' perceptions regarding childhood obesity, more specifically, the

causes, consequences and signs of childhood obesity. Now that mothers' understanding of childhood obesity was established, the topic of prevention was discussed. The final manuscript (section four) qualitatively explored Mexican American mothers' perceptions regarding their role in prevention and associated barriers in preventive behaviors.

The findings of this study should be interpreted within its limitations. The systematic literature review used flexible inclusion criteria to retain as many articles as could reasonably be synthesized (e.g., expanding beyond solely Mexican American or mother samples). Possibly studies were included that were less relevant to the specific sample of interest – Mexican American mothers. Secondly, the systematic literature review included only published literature, excluding grey literature. Relevant studies not yet published or in non-academic resources were possibly excluded. Lastly, the qualitative studies used a convenience sample. The mothers choosing to participate in focus groups discussing family health might differ from typical Mexican American mothers and the study's findings might therefore not be generalizable to other Mexican American mothers.

This dissertation contributes findings to the limited body of research regarding Mexican American mothers' perceptions of childhood obesity and their role in prevention. Whereas research has focused on school and community perceptions regarding childhood obesity, mothers, who are critical in preventive efforts, provided valuable information regarding their role in preventing obesity among their children. Several findings could be pursued in future studies focusing on Mexican American

mothers, their perceptions of childhood obesity and their unique barriers faced in engaging in preventive behaviors.

The findings of this dissertation highlight the need for educational programs for Mexican American mothers. Mexican American mothers sensed a need and responsibility to take care of their child's diet and activity needs. They, ultimately, felt responsible for their child's health. However, mothers did not seem to be supplied with the skills to engage in preventive behaviors or the knowledge of which behaviors were effective in preventing childhood obesity. Educational programs for Mexican American mothers would need to take into consideration how Mexican American culture influences the parenting, body image issues, food choices and perceived norms. These findings might serve as a foundation to guide health educators in providing culturally tailored obesity prevention programs for Mexican American mothers.

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APPENDIX A
FOCUS GROUP QUESTIONS IN ENGLISH

1. What does it mean for a child to be healthy?
2. How do you know a child is at a healthy weight?
3. What are the warning signs that a child is becoming overweight?
4. What does the word obese mean to you?
5. What causes a child to become overweight?
6. What role does genetics/inheritance play?
7. Why do you believe some children are overweight and others are not?
8. What do you think parents can do to keep children from becoming too heavy?
9. Describe what you, a mother, could do to keep your child from becoming too heavy?

APPENDIX B

FOCUS GROUP QUESTIONS IN SPANISH

1. ¿Qué significa que un niño sea saludable?
2. ¿Cómo sabe usted que un niño es de peso saludable?
3. ¿Qué son las señales de alerta que un niño está llegando a un peso excesivo?
4. ¿Qué significa la palabra obeso para usted?
5. ¿Qué causa a un niño estar de sobrepeso?
6. ¿Qué rol cree usted que tiene la genética o herencia?
7. ¿Por qué cree usted que algunos niños tienen sobrepeso y otros no?
8. ¿Qué piensa que podrían hacer los padres para prevenir el sobrepeso en niños?
9. ¿Qué piensa que podrían hacer los padres para prevenir el sobrepeso en sus hijos?

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