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Influence of Social Context on Eating, Physical Activity, and Sedentary Behaviors of Latina Mothers and Their Preschool-Age Children

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As more U.S. children grow up in Latino families, understanding how social class, culture, and environment influence feeding practices is key to preventing obesity. The authors conducted six focus groups and 20 in-depth interviews among immigrant, low-income Latina mothers in the Northeast United States and classified 17 emergent themes from content analysis according to ecologic frameworks for behavior change. Respondents related environmental influences to child feeding, diet, and activity, namely, supermarket proximity, food cost, access to recreational facilities, neighborhood safety, and weather. Television watching was seen as integral to family life, including watching during meals and using TV as babysitter and tool to learn English. Participation in the WIC program helped families address food insecurity, and child care provided healthy eating and physical activity opportunities. Health promotion efforts addressing obesity trends in Latino children must account for organizational and environmental influences on the day-to-day social context of young immigrant families.

Keywords: *socioenvironment influence; child overweight; Latina mothers and children*

INTRODUCTION

Latinos are the largest and most rapidly growing population group in the United States. The dramatic rise of obesity within minority and immigrant populations is a pressing public health concern and highlights the need for early prevention. According to the most recent (2004) Pediatric Nutrition Surveillance (PedNSS) report, among Hispanic children age 2 to 5 years, 36% were either at risk of or overweight in 2004, compared with 27% of non-Hispanic Blacks and Whites; indeed, Hispanics comprised the only racial/ethnic group in which the proportion classified as overweight (18.4%) exceeded the percentage at risk of overweight (Polhamus et al., 2004).

Persistent increases in obesity prevalence have been attributed to socioeconomic and environmental conditions that discourage physical activity while encouraging the consumption of greater quantities of energy-dense, low-nutrient foods (Bruss et al., 2005;

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Morland, Wing, & Diez Roux, 2002; Sallis & Glanz, 2006). Sedentary behaviors are at an all time high, with startling levels of screen time documented at increasingly younger ages (Kaiser Family Foundation, 2003). Children age 6 and younger use screen media about 2 hours each day; 36% have a TV, 27% have a VCR or DVD player in their bedroom, and 30% play video games. Among children age 4 to 6, 27% use a computer daily, spending more than an hour on average.

Environmental factors may have larger negative effects on disadvantaged and minority children than on their advantaged White peers and thus contribute to disparities in obesity rates (Davis et al., 2003; Giles-Corti, Macintyre, Clarkson, Pikora, & Donovan, 2003; Green et al., 2003; Sallis & Glanz, 2006). For example, neighborhood design and safety can affect daily decisions about walking to school, eating at fast food restaurants, and playing outside (Morland et al., 2002). These decisions in turn may increase obesity risk by creating conditions and lifestyles that foster an imbalance between energy intake and expenditure, resulting in positive energy balance (Bruss et al., 2005; Morland et al., 2002; Sallis & Glanz, 2006).

As more children grow up in families with immigrant parents of Latin origin (Hernandez, 2004), understanding how social contextual factors influence maternal caregiving practices and formation of children's lifestyle behaviors will be essential to slowing obesity trends. Few studies have examined socioeconomic and environmental influences on the eating, physical activity, and sedentary habits of low-income Latino children and families. In this article we describe immigrant, Latina mothers' perceptions of factors that act as barriers for establishing healthy eating and physical activity habits of their preschool-age children.

METHOD

As part of the Latino Mothers' Child Feeding Practices (LMCFP) study, we conducted qualitative research in two sequential phases, focus groups and in-depth interviews (Lindsay, Sussner, Greaney, & Peterson, 2006). Participants in both phases were purposively selected from women enrolled in a randomized, controlled trial of a non-formal educational model designed to improve diet and physical activity behaviors of low-income mothers (Peterson et al., 2002). LMCFP sampling criteria included: Latino ethnicity, living in the greater Boston urban metropolitan area, speaking Spanish as the primary language at home, and having delivered a live-born baby in the past 48 months.

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We selected two nonoverlapping samples of women for the focus groups and for in-depth interviews by contacting every fifth woman from participants in the randomized controlled trial who met these criteria. All eligible mothers were sent recruitment letters, and follow-up phone calls were made. We developed a focus group guide (Phase I) to identify (a) Latina mothers' perceptions of their own and their child's weight status and definition of overweight, (b) child feeding practices related to overweight, and (c) the role of sociodemographic, sociocultural, and feeding environment influences on mothers' child feeding.

Over a 6-month period from September 2005 to February 2006, we conducted six focus groups with 31 women in Phase I (September to December 2005) and 20 in-depth interviews in Phase II (December 2005 to February 2006). Focus group sessions and individual interviews about 60 to 120 minutes in duration were conducted by a native speaker of Latino origin and audiotaped. Focus groups were conducted at local Boston-area community health clinics after hours and individual interviews conducted at participants' homes. Analysis of focus group data revealed key themes related to physical activity, sedentary behavior, and child care influences in addition to diet and feeding practices. The interview guide was subsequently developed, following format used for focus groups but including new questions to obtain more in-depth information on these themes. Verbatim Spanish transcripts with identifiers were translated to English by a bilingual, independent consultant. Transcripts from focus group discussions were reviewed by an anthropologist (KMS) to develop a codebook. Two coders (KMS, MG) trained in qualitative methods independently read and manually analyzed focus group transcripts using content analysis to identify similar phrases and common themes. Inconsistencies in coding were discussed and resolved. The same protocol was followed for analysis of the in-depth interviews (Phase II), and new themes were added to the codebook. In all, 16 emergent themes were organized by domains of the socioecological model (McLeroy, Bibeau, Steckler, & Glanz, 1998). Data are presented textually with quotes to illustrate findings.

RESULTS

Nearly all of the 51 study participants were foreign-born (94%) and had lived in the United States for an average of 9 years; 47% emigrated from Central America and 33% from the Dominican Republic. Participants' mean age was 32 years (range 23 to 44), and they had an average of 2.5 children. Half were married (51%) and 72% of mothers had obtained a high school diploma. The 49% of women who were employed outside of the home worked 32 hours weekly on average. Finally, 46% of the sample reported a household income less than \$20,000/year.

Influences on Mothers' Feeding Practices and Children's Eating Habits

Economic Constraints, Food Pricing, and Food Insecurity. In all six focus groups and in the majority of the in-depth interviews, mothers reported economic constraints, food pricing, and food insecurity as being significant barriers to providing healthful meals for their families. Some spoke of the burden of having to choose between food and other necessities for their families. Despite their tight budgets, these mothers reported that food was always the top priority.

Right now we are in a very difficult situation because if we have fruit or food in the house, there is not money to pay the bills. We are six in total, four kids and my husband and I.

Mothers also discussed that healthy food, such as fruit, tends to be more expensive, so that they selected their produce based on price, seeking out sales and specific stores to purchase healthy foods. This was a consistent theme throughout the focus groups and in-depth interviews.

I learn to buy the fruit when is cheap, if apples are cheap, everyone eats apples, and if bananas are expensive, they don't eat. And if bananas and apples are cheap this week, I'll buy both and they get used to it.

To deal with scarce resources, some mothers participating in the focus group discussions shared strategies they used, including shopping at value or cost-cutting stores where foods were more affordable, being attentive to food sales, staying aware of coupons and special price drops, and traveling to several different locations to find the best price. Some mentioned "buying cheaper foods that are also healthy," a flexible approach that they had learned from the Special Supplemental Food Program for Women, Infants and Children (WIC).

I take a look at all the flyers that I received from the other supermarkets and get whatever Store A has on special but to do the grocery shopping at Store A is very expensive. For me it is very expensive. It may be not for other people. I go to Store B.

Lack of Time Due to Work and Other Competing Demands. Most participants in focus groups and interviews, whether working at home or outside the home, talked about lack of time to prepare dinners and conflicting time schedules as important influences on families' habits. Many commented they seldom ate together as a family since moving to the United States. Children ate at different times from each other and their parents, often while watching TV. For many, weekends were seen as the only time the family has a chance to eat together.

Once a week on Saturday we go to restaurants. We go to the buffet. It is very cheap and we all can eat different things and whatever everyone wants.

During the weekends, I cook and I wait for everyone to sit at the table and we eat all together.

Limited Social Support and Social Networks. Mothers in the majority of focus groups and in-depth interviews talked about limited social support (e.g., from friends and neighbors) and feelings of isolation as important changes affecting their lives since immigrating to the United States. Changes in mothers' social support networks appeared to influence their daily lives and that of their children. For example, several mothers discussed how lack of help from friends or family limited their ability to provide healthful meals or to allow their children to play outside.

Another thing that is very important is the help. Here nobody helps you out with the children . . . here there is no one, not a sister or a neighbor, no one.

In addition, mothers also spoke about the "fast pace" of life in the United States, resulting in less time to build relationships with friends and neighbors and exacerbating

a sense of isolation. Some mothers talked about neighbors in the United States not being as friendly and as receptive to reaching out to lend a helping hand (e.g., sharing food, babysitting) as neighbors from their home countries, although this was not a consistent theme.

The way of living here is very different, over there is always a neighbor—they share some food if you did not get a chance to cook. People are different—they share more.

Availability and Accessibility to Healthful Foods. In the majority of focus groups and interviews, mothers described how proximity and accessibility to grocery stores influenced their food shopping choices and consequently, their children's diets. For several mothers in focus group discussions and interviews, having more than one child to transport to and from the store also was seen as being difficult for mothers to handle. For these respondents, having access to a car to drive to food stores was important. When a car was unavailable many mothers reported having to rely on neighborhood mini-markets for the family's food.

I would like to eat more meat because in my country we eat more meat but here it is very expensive. If we had a car it would be different because we would be able to go to more inexpensive places. I have to walk with the groceries and with a child it is difficult.

For some mothers, having to rely on mini-markets limited the variety of healthy foods they could buy for their children, although this was not consistently seen as a barrier in all focus groups and in-depth interviews. More specifically, mothers talked about the limited availability and lack of choices with respect to fresh fruits and vegetables and healthy foods in the low-income neighborhoods where they lived. In addition, some explained that when fresh fruits and vegetables were conveniently available to them, the cost of these foods was high relative to other foods, thereby limiting their ability to purchase the healthier food choices.

Sometimes, not always, but some months, you have to restrain yourself to just food, nothing else but food and you can't buy such and such cereal or a lot of fruit because fruits are expensive.

To combat the high price of fruits, vegetables, and meats, some mothers reported traveling to numerous food stores in order to find the best prices on such healthy foods, though this was not a consistent theme throughout focus group discussions and in-depth interviews.

Yes, to find a bargain I will go to many supermarkets. For example, I have one supermarket that is very close to the house but the meat is very expensive, so what I do is to go and buy the meat somewhere else. I do the same thing when I am going to buy vegetables because in this supermarket they are also very expensive. If there is something that in this supermarket is about \$4, I can go to another place and maybe get it for \$2.

Convenience of Eating Out and Accessibility to Fast Food and Ethnic Restaurants. In most focus groups and in-depth interviews, mothers talked about an increased reliance on eating out due to widespread availability of fast food restaurants that are less expensive, child friendly, and advertise foods to children.

I take them to McDonald's, I'm not perfect and my kids do eat McDonald's once a week . . . they know that if they have problems during the week they have to wait another day . . . I do use that to motivate them.

Culture also influenced families' choices of where to eat out; several mothers mentioned their preference for local ethnic restaurants that offer traditional foods in a convenient context.

We go to Dominican restaurants to eat what we can cook in the house but this happens because I do not feel like cooking, so we go out to eat.

Most mothers appeared aware that eating out at fast food restaurants resulted in their children consuming more unhealthy foods (e.g., French fries, desserts).

I don't eat out with the children very often because the food that comes from restaurants is not good.

Role of Food Advertising Targeting Children. Mothers also discussed the role of advertising and being under pressure from children to provide foods high in sugar and fats such as specific cereal brands in response to food advertising targeted at children, though this was not a consistent theme in all focus groups and in-depth interviews. Most mothers, however, reported that their children's eating patterns differed significantly from what they had experienced growing up in their native country with their children increasingly consuming more fast foods and unhealthy snacks. Mothers commented that as a result of increased exposure to media advertising of unhealthy snacks and the abundance of fast food restaurants, children were eating higher levels of fat, sugar, and salt, resulting in rapid weight gain since moving to the United States.

If you don't have time, then you start to feel guilty and then you go and buy for the kids that new cereal with sugar that the kid sees on TV.

Even if you go to the supermarket, my kids like the Incredibles and they want everything with the Incredibles . . . with that movie that came out.

Influences on Physical Activity and Sedentary Behaviors

The focus group discussion guide did not include prompts about physical activity and sedentary behaviors, but themes related to these behaviors were raised by several mothers in most focus groups. The in-depth interview guide was therefore developed to allow more detailed exploration of influences on physical activity and sedentary behaviors among Latino children.

Sedentary Lifestyles. In some focus groups and in most in-depth interviews, mothers reported that their children and families lead sedentary lifestyles and that they do not engage in regular exercise, noting that in their home country there are more opportunities to be physically active.

Here even if you don't eat much, you gain weight because whatever you eat stays and makes you fat. In my country you exercise without even thinking about it.

In the majority of in-depth interviews, mothers reported that their families primarily engage in sedentary activities, including watching TV, listening to music, and reading. When discussing active leisure time activities, most mothers mentioned participating in physical activities with their children, including walking, dancing, and playing inside (e.g., active games).

I like to walk and sometimes at home I play some music and we dance together, we enjoy music a lot, so we jump and dance.

According to most mothers, more active play (e.g., going to the playground, riding bicycles, and playing sports) is limited by several factors, including cold weather, neighborhood safety concerns, lack of parental time due to work and other competing demands, and conflicting family schedules. These were consistent barriers discussed by mothers in most in-depth interviews.

I bring the kids to the park during summer time, my two kids. Right now because it is cold we do not go very often, sometimes we bring them to Chuckie Cheese's so they have fun for a little while. During summer we go to the parks very often.

Time Limitations. A consistent theme throughout the focus groups and in-depth interviews concerned parents' various competing demands such as long work hours, multiple working shifts, and multiple family responsibilities resulting in families experiencing a significant decrease in their physical activity levels since immigrating to the United States.

Before I did not have to worry about work or a family, I knew that my parents were there for me to give me everything, but now that I came here and decided to have a family, things changed because I have to work, take care of the kids and my house.

I really do not have time to take the kids to the park because I have to go to work at 4 o'clock and it does not matter if it is winter, summer.

Weather. The weather also appeared to affect families' levels of daily physical activity. In some focus groups and in the majority of in-depth interviews mothers explained how the cold weather in the United States prohibited them from being as active as they were in their warmer, native countries. Many mothers talked about fresh air, warm weather, and sunshine in their home countries leading to people walking and being outside more than in the United States. Participants spoke of exercise being integrated into daily life in their home countries, which enabled people "to eat and not get fat."

We used to exercise more since there is warm, you can walk more and it's not like here that we are always driving, there is less exercise here . . . that is why we all got fat here, we got here and in 2 years we were weighing 20 pounds more.

Access to Recreational and Sports Facilities. In the in-depth interviews, mothers were asked to comment on the accessibility of neighborhood parks and recreation options for their families. While most mothers reported that parks were available fairly close to their homes, the cold weather prevented families from using these parks except for in the summer.

There are parks around here, like three blocks away from the house. I bring the kids to the park during summer time, my two kids. . . . Right now because it is cold we do not go very often.

Cost of Health Clubs and Use of Sports Equipments. Financial concerns also limited families' ability to engage in regular physical exercise. For example, mothers talked about the expense of joining a gym or health club that would make it difficult to meet other family needs, although this was not a consistent theme.

It would be a lot of money [to go to the gym]. It [money] is always going to be a problem, if you do not work how do you pay the bills or grocery shopping? Who is going to watch the kids?

Neighborhood Safety. Neighborhood safety emerged as a potential barrier to engaging in physical activity in a few focus groups and in most in-depth interviews. Some mothers reported that their neighborhoods were not safe enough for their children to play outside, especially at night.

Sometimes, there are many people who sell drugs and that is a problem. Last year I heard gunshots and it was during the day. I wonder if it was for drugs. Maybe that is going to stop.

It is not safe . . . sometimes there are many vagrants in the street. That is why sometimes I do not even like to be on the sidewalk of the house. . . . It is better to stay inside here or go out on the porch.

Reliance on Television. In most focus groups and in-depth interviews, TV watching appeared to be an integral part of families' lives in the United States, including watching TV during family meals.

Here they are always sitting down and watching TV since they get back from school.

Some mothers thought that having a TV in the children's bedrooms may increase the number of hours of TV watched by children, especially late at night.

I tell her at what time she has to turn off the TV because she has to go to bed early because she has school the next day. Sometimes she turns it back on in her bedroom and I do not notice. Sometime you think that you are doing something good and it is really bad for them.

In addition to television, mothers talked about their children playing computer games (e.g., Nintendo) and/or video games on a daily basis.

The kids are allowed to watch TV 1 to 2 hours a day and games on the computer maybe an hour because when they get home from school they have to finish homework first or read, so after they finish they can watch TV.

Some mothers felt that watching too much TV is not good for their children because it negatively affects their energy levels and interest in other activities such as playing outside. These mothers reported trying to limit the number of hours their children watch TV by establishing clear guidelines such as requiring children to finish their homework and/or do other activities before they are allowed to watch TV.

I limit their time because if it is up to them, they will watch TV the whole day, so what I do is to tell them that they can watch for about 2 hours but after that we are going to do something else.

Some mothers, however, believed that as long as children were watching age-appropriate programs, watching TV was not a problem.

I know that watching TV for a long time is not very good for the kids either, if they are watching the cartoons it is fine because I won't put her to watch a show that is not appropriate for her age.

A few participants in in-depth interviews believed that TV is an educational tool helping their children to learn English and become more integrated into the American school system.

The TV is very good for the kids, for example when I went with my daughter to the interview at the school, the teacher asked me if my daughter speaks English and I told her maybe because she watched TV in English. Then the teacher started asking her things in English and she answered all the questions but I never taught her how to speak English because we speak Spanish at home all the time.

Finally, for some mothers who participated in the in-depth interviews, the television was frequently used as a babysitter when parents were at work, were too busy to play with their children, or weather kept children from playing outside.

My little girl watches a lot TV because she does not have anyone to play with in the house . . . sometimes she colors in her coloring books.

Housing. Housing conditions, such as living in apartment buildings, emerged as another barrier to children being more active, but this was not a consistent theme.

Here you can't move because you are inside of the apartment . . . there [home country] the people move more, there is sun.

Increased Reliance on Automobile Use for Transportation. In the majority of in-depth interviews, mothers talked about an increased reliance on cars for transportation in the United States and how this resulted in decreased physical activity levels in their families. For example, mothers explained how in their native countries, they had limited access to cars and consequently relied on bicycles and walking to get to work and to do errands.

I exercise less because the advantage that you have here [United States] of having a car. For example, when you go to the mall, you have escalators, elevators or there is a bus to go anywhere. This country offers you convenience for everything. My country is not like that.

Organizational Influences on Eating and Physical Activity

Increased Reliance on Child Care. Several mothers in the majority of focus groups and in-depth interviews reported having to resort to caregivers for child care, including relatives, family day care, and child care centers. Relying on others for child care in turn affected their children's eating and physical activity habits.

My mother, she is taking care of her granddaughter and she wants to see her chubby . . . she feeds her like if she was stuffing a bag, it's a pity.

Mothers whose children attended day care centers appeared to be more aware of their children's diet and daily activities away from home than mothers whose children were cared for by friends or relatives. Regular communication with day care staff through conferences, meetings, and phone calls appeared as a critical factor in informing mothers about their child's diet.

She [child care teacher] lets me know what they eat, and they also have a nutritionist that goes to check what kind of food the kids are having if it is healthy food. We talk to her almost every day and if she sees a change in the kids, she usually calls me and lets me know what is happening, if they are not feeling well or if they are not eating. I am always up to date on what is happening, she always keeps me posted.

Children who attended day care centers also appeared to have more opportunities for physical exercise through activities such as going to the park, walking, and playing outside than those who were cared for by relatives or home day care providers. Weather conditions, however, largely determined how often these kinds of physical activities occurred at daycare centers.

They [day care staff] bring them every day to the park. They have many activities outside, they play, run, and jump; this is how he exercises.

WIC Program Participation. In all focus groups and most in-depth interviews, mothers described how the WIC program helped them when they first moved to the United States and could not afford food or when they were out of work.

When I stopped working, so then my income was not there . . . there were months that I had to go to the food pantry, WIC refers you to those places and they give food . . . for me that helped me to give to my family.

Mothers also reported that the WIC program helped them learn about the importance of good nutrition for themselves and their family by teaching them about healthy foods. In several instances, mothers mentioned they learned from WIC staff about common cultural practices that were not optimal for their children's health.

I was giving tea to my baby . . . but it is not good and I learned. The same with the 2% milk; they talk to you and educate you about nutrition, they teach you, because when you come here from another country. I did not know about the pyramid of food, the amount of bread, the amount of rice and fruit . . . and that is a big influence.

DISCUSSION

The aim of this research was to examine complex influences on immigrant Latina mothers' feeding practices and their children's eating and physical activity habits. Theory-driven qualitative approaches are essential to understanding and intervening on disparities in pediatric obesity (Lindsay, Sussner, et al., 2006). Our findings suggest that immigrant Latina mothers face numerous barriers to establishing and maintaining healthful eating

and physical activity habits for their families. Emergent themes from focus groups and interviews reflected the applicability of a social contextual model (Sorensen et al., 2003) that relates social class and culture to multiple levels of influence on families (Novilla, Barnes, de la Cruz, Williams, & Rogers, 2006) posited by ecologic approaches (Bronfenbrenner, 1986; McLeroy et al., 1998), including individual (e.g., material circumstances and daily hassles), interpersonal (e.g., social support and networks), organizational (child care, federally funded nutrition programs), and environmental (e.g., access and proximity to grocery stores, neighborhood safety, access to parks and recreational facilities) factors.

Although we purposively invited mothers with children age 2 to 4 to participate in the study and developed the discussion guides to focus on feeding practices and eating and physical activity habits of preschool children, most mothers discussed their caregiving practices and children's behaviors within the context of the whole family, including older children and extended family members. This finding corresponds with other qualitative research emphasizing the central importance of family as the unit of change within Latino communities (Crawford et al., 2004). This theme also suggests that prevention of child overweight and obesity will not be successful without considering parents and children as a complete unit (Novilla et al., 2006), rather than viewing the problems of an obese child in isolation. Considering the importance of parenting in obesity prevention, only a limited number of interventions report the direct involvement of parents in childhood prevention efforts (Lindsay, Kim, Mucha, & Gortmaker, 2006).

Limited social support and social networks emerged as important influences in the lives of Latino, immigrant families, affecting children's eating and physical activity habits and mothers' feeding practices. Social support not only appears to enable individuals to become part of the social structure but also affects health and health-related beliefs and behaviors (Thornton et al., 2006). Social networks have been shown to affect parenting behaviors, especially in relation to prescribing diets of their young children. In our study, lack of tangible support seemed to affect children's daily activities, such as decreasing opportunities for physical activity due to unavailability of a caregiver while the mother was working.

For a few study participants, their financial situations were so limited that there were times when they could not afford to feed their families. These mothers discussed relying on WIC program benefits in times of financial hardship. Previous studies (Cook et al., 2006; Melgar-Quinonez & Kaiser, 2004) have shown that household food insecurity influences mothers' child feeding practices, children's eating habits, and health. Food insecurity in low-income Latino households has been related to a decrease in household supplies of juice but not fruit-flavored punches and drinks, overconsumption of which could promote excessive weight gain (Kaiser et al., 2004).

About half of the immigrant mothers participating in our study relied on child care for their children, and this setting emerged as an important social environment influence on children's eating and physical activity. Previous research has shown that in addition to parents and family members, behaviors related to diet and physical activity are also modeled by other caregivers outside of the family unit and that child care settings represent an important setting where children's early eating and physical activity are developed (Dowda, Pate, Trost, Almeida, & Sirard, 2004; Dunn et al., 2006; McGarvey et al., 2006; Patrick & Nicklas, 2005; Williams et al., 2002). With the growing trend of an increasing number of families relying on child care, this becomes an important point of intervention to prevent child overweight (Story, Kaphingst, & French, 2006). Moreover, our findings revealed that mothers whose children attended day care centers appeared to

have a better understanding of their children's eating and physical activity patterns than mothers whose children attended home child care, suggesting closer regulation and technical assistance is needed to support feeding and physical activity interventions in home day care.

Our findings revealed that organizations such as the WIC program help address many of the barriers that mothers face in providing healthy foods to their children, including food insecurity, nutrition education, and cultural feeding practices. Others have emphasized the role that the WIC program can play in addressing childhood overweight in low-income families by building parenting capacity and skills to increase the effectiveness of nutritional education (Crawford et al., 2004). Similar to previous research in this study population (Dubowitz et al., 2007), respondents reported that access and proximity to supermarkets influenced children's eating habits and mothers' feeding practices. Residents of lower socioeconomic, minority neighborhoods may be at a disadvantage regarding food choices, particularly if they perceive that alternative food options are not accessible or affordable (Dibsdall, Lambert, Bobbin, & Frewer, 2003; Laraia, Siega-Riz, Kaufman, & Jones, 2004; Morland et al., 2002; Popkin, Duffey, & Gordon-Larsen, 2005). Mothers in our study also reported the cost of healthy foods as being an important factor influencing their daily food purchasing decisions and the variety of foods consumed by their children and families. A few studies suggest that expenditures for high-priced foods typical of lower socioeconomic, minority neighborhoods reduces servings of fruits, vegetables, and dairy products consumed by lower income families (Chung & Myers, 1999).

Our findings revealed several environmental influences on children's physical activity levels, including access to recreational facilities, neighborhood safety, weather, and housing. A few studies of preschool children have found that the more time children spend outdoors, the higher their activity levels (Baranowski, Thompson, DuRant, Baronowski, & Puhl, 1993; Irwin, He, Bouck, Tucker, & Pollett, 2005; Klesges, Eck, Janson, Haddock, & Klesges, 1990). Although eating and physical activity choices are ultimately made by individuals, environmental factors may pose barriers to individuals' efforts to establish healthy lifestyles (Sallis & Glanz, 2006). Substantial environmental changes in minority communities are needed to foster and maintain children's healthful eating and physical activity habits (Fitzgibbon & Stolley, 2004; Sallis & Glanz, 2006; Sherry et al., 2004; Young & Nestle, 2002).

Consistent with studies conducted in other populations, weather was one of the most important factors mentioned by Latino participants as a barrier for their children being physically active (He, Irwin, Sangster Bouck, Tucker, & Pollett, 2005; Irwin et al., 2005; Salmon, Owen, Crawford, Bauman, & Sallis, 2003). Among low socioeconomic status populations, lack of resources to obtain winter clothing could be yet another barrier to being active in cold weather. Interventions to promote physical activity among immigrant families from warm-weather countries could incorporate strategies to help families understand alternatives for being physically active during cool or rainy weather. For example, our findings suggest child care providers could educate Latino families about outdoor play suitable for young children, given mothers' preference for "active play" as a leisure time physical activity.

Study participants reported that their children watched many hours of TV daily, influencing their physical activity levels. These findings are consistent with quantitative studies relating TV viewing and children's physical activity levels to risk of overweight (Ariza, Chen, Binns, & Christoffel, 2004; Dennison, Erb, & Jenkins, 2002). Several mothers also reported that having a TV in the bedroom increased the hours children watched TV during the day and at night. Consistent with research in older children (Wiecha, Sobol, Peterson, & Gortmaker, 2001), this theme suggests that parents should

be educated about the importance of limiting preschoolers' TV and video viewing time and access. Excessive TV viewing also may contribute to obesity by exposing children and families to advertising of unhealthy foods (Wiecha et al., 2006), a factor mentioned by some mothers participating in our study.

Results of this study should be considered in light of some limitations. Findings are based on a nonrandom, purposive sample of low-income, Latina mothers in the greater Boston metropolitan area initially recruited through the WIC program to participate in a randomized health promotion trial (Peterson et al., 2002). Purposive sampling can be considered a limitation on the generalizability of qualitative findings, but the multiethnic composition of participants in focus groups and interviews strengthens the potential applicability to several Latino population groups. The opinions and responses of mothers participating in the focus group discussions may have been influenced by some of the more vocal mothers at the discussion. Furthermore, mothers recruited to participate in this study could have been those who were more concerned in general about child feeding issues and healthy lifestyles. Future research can address these limitations by exploring social contextual influences on children's eating and physical activity and sedentary behaviors in Latino immigrants from other countries and other immigrant groups. In addition, research is needed that builds on the qualitative findings reported here but quantifies the relationship of social context factors to early development of child overweight.

IMPLICATIONS FOR PRACTICE

Results from this study highlight many social contextual factors that influence child's early diet and eating and physical activity habits and help identify potential barriers that mothers in this population face in establishing children's health behaviors. Health promotion interventions based on the social contextual model have been effective in changing lifestyles among working-class adults (Emmons et al., 2005; Sorensen et al., 2005), but our findings underscore the importance of integrating social class and culture into ecologic frameworks informing the design of obesity preventive interventions for young immigrant families. Findings suggest that nutrition and physical activity interventions targeting Latino children must consider the day-to-day social context of immigrant, minority families within which eating, physical activity, and sedentary behaviors are developed.

We combined ecological and social contextual frameworks to guide our study design within a selected programmatic setting. As such, findings provide an in-depth understanding of how organizational influences can be "put to work" to help low-income families prevent and control childhood overweight in the context of other influences on health behaviors. Potential strategies that could be implemented by WIC or child care providers include educating parents on eating healthful meals away from home, increasing awareness of how parents' activity patterns impact those of their children, and providing culturally appropriate options for staying active during cold weather. Countering perceptions of the positive role of TV and encouraging parents to limit their own TV viewing and setting limits on family viewing and access to TV should also be addressed by organizations serving immigrant Latino families. Community-based efforts are needed to reduce the environmental barriers to healthful eating and physical activity faced by low-income groups, including neighborhood safety and lack of markets offering healthful foods at affordable prices.

Further research is needed to develop quantitative measures of sociocultural and environmental influences on low-income, immigrant children and their families suitable for administering in organizational settings such as the WIC program. Additional qualitative research should explore organizational influences on eating and physical activity practices of Latino children in child care settings. Combined lessons from such quantitative and qualitative research will prove invaluable in understanding specific barriers and facilitators to preventing and controlling childhood overweight and would have direct application for design and evaluation of programs serving minority, low-income Latino families.

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