

Socio-Cultural, Organizational, and Community Level Influences on Physical Activity Levels of Latino Preschool-Age Children: A Qualitative Study

Ana C. Lindsay^{1,*}, Mary L. Greaney², Katarina M. Sussner³, M. Erin Pfeiffer⁴ and Karen E. Peterson⁵

¹*Exercise and Health Sciences Department, College of Nursing and Health Sciences, University of Massachusetts Boston, 100 Morrissey Boulevard, Boston, Massachusetts, USA*

²*Kinesiology Department, College of Human Sciences and Services, University of Rhode Island, Kingston, Rhode Island, 02881*

³*Department of Oncological Sciences, Division of Cancer Prevention and Control, Mount Sinai School of Medicine, One Gustave L. Levy Place, Box 1130, New York, NY, USA*

⁴*Curamericas Global, Inc., Raleigh, North Carolina, USA*

⁵*Human Nutrition, Department of Environmental Health Sciences, University of Michigan School of Public Health, Ann Arbor, Michigan, USA*

Abstract: *Objectives:* As more children grow up in families with immigrant parents of Latino origin, there is a need to understand key influences on physical activity behaviors of young Latino children to prevent obesity in this high-risk group.

Design: We conducted six focus groups with low-income Latina mothers (N = 33) whose preschool-aged children (2-5 years) were enrolled in the Supplemental Nutrition Program for Women, Infants and Children (WIC) program in Rhode Island. *Data was analyzed using content analysis to identify recurrent themes.*

Results: Despite understanding the importance of physical activity for overall health, physical activity was not a top priority for the Latino mothers participating in the focus groups. Mothers reported facing numerous barriers to establishing and maintaining healthful physical activity habits for their preschool-aged children and themselves, particularly financial and socio-cultural barriers. Analyses revealed that Latina mothers perceive the WIC as a program focused on the development and maintenance of healthy eating habits and nutritional status of children and not physical activity.

Conclusions: Recognizing the importance of socioeconomic position and the influence of cultural factors on physical activity is essential if effective prevention and intervention programs for Latino families and their children are to be designed. Study findings emphasize the importance of the family as a central unit of change and suggest that successful interventions to promote physical activity of low-income Latino preschool children must take into account the needs and constraints of the family unit as a whole. The WIC program has the potential to be a venue for promoting awareness of and educating low-income Latino parents about the importance of helping their children develop and maintain early healthful physical activity habits. The WIC program can also play an important role in facilitating access and creating programs and services that provide increased opportunities for physical activity of young children and their families.

Keywords: Physical activity, Latino, Obesity, Preschoolers, Mothers, WIC Program.

INTRODUCTION

Latinos are the largest and most rapidly growing population group in the United States [1]. About 36% of Hispanic children aged 2 to 5 years were either overweight or obese compared with 28.2% of non-Hispanic whites and 26.4% of non-Hispanic blacks, representing the second highest prevalence among racial/ethnic [2]. The high rates of obesity within

minority and immigrant populations, particularly Latinos are a pressing public health concern and highlights the need for early prevention. Altering secular trends in chronic diseases will require substantive efforts to reduce the incidence of childhood overweight at early ages (IOM, 2005) and underscore the importance of research on factors driving early incidence of child overweight in this racial/ethnic group [3].

Increasing physical activity among young children is a critical component in preventing overweight and obesity. During the preschool years, physical activity appears to have a greater influence on children's body mass index (BMI) than nutritional intake [4, 5]. Furthermore, children who are physically active early in

*Address correspondence to this author at the Department of Exercise and Health Sciences, College of Nursing and Health Sciences, University of Massachusetts, Boston, 100 Morrissey Blvd., Boston, MA 02125; Nutrition Department, Harvard School of Public Health, 677 Huntington Avenue, Boston, MA 02116, USA; Tel: 617-287-7579; Fax: 617-287-7500; E-mail: Ana.Lindsay@umb.edu

life have reduced risk for large adiposity gains in elementary school through adolescence [6].

The American Academy of Pediatrics and other leading health organizations recommend that children be physically active for at least sixty minutes each day [7-9]. The National Association for Sport and Physical Education (NASPE) recommend that preschool-aged children accumulate 120 minutes of physical activity per day, with 60 minutes coming from structured physical activity, and 60 minutes from unstructured or spontaneous active play [9]. In addition, the NASPE guidelines state that preschoolers should not be sedentary for more than 60 minutes at a time, except when sleeping. Unfortunately, many children in the U.S. do not meet this recommendation [9]. A study by Beets *et al.* (2011), conducted to estimate the prevalence of preschoolers meeting the NASPE guidelines found that prevalence rates varied considerably, with estimates ranging from 13.5% to 99.5% for 120 minutes of light-to-vigorous physical activity [10]. A study by Sisson *et al.* (2009), using data from the 2001-2006 National Health and Nutrition Examination Survey (NHANES), a representative sample of the US population showed that 35% of 2-5 year old children exceeded the recommended 2 hours of daily screen-time viewing [11]. A more recent study by Fakkouri *et al.*, (2013) using data a recent NHANES (2009-2010) also reported a decline in physical activity levels with age and an increase in screen-based sedentary behaviors during childhood [12]. Furthermore, racial/ethnic disparities in physical activity are evident, with non-Hispanic white children engaging in more vigorous activity than non-Hispanic black or Mexican American children [5, 13-15]. In a small, randomized control trial, Ruiz *et al.* (2011), found that Hispanic preschool children only spent 3.4% of their day engaged in moderate-to-vigorous physical activity [16].

Behaviors, including physical activity patterns are established in early childhood [3, 4, 17]. Although children may model healthful behaviors of family members and caregivers, they also may model unhealthful behaviors [5, 14, 18]. Therefore, promoting physical activity among children requires consideration of the child, caregivers and the home and community settings in which care for the child is provided. Current evidence suggests that parenting interventions may work best as a component of comprehensive interventions [17]. Incorporating parenting education and skills modules into well-established programs, such as the Supplemental Nutrition Program for

Women, Infants and Children (WIC) may be an effective way to promote healthy lifestyles among low-income families [19-21].

As more children grow up in families with immigrant parents of Latino origin, there is a need to understand key influences on their physical activity behaviors and that of their families. Qualitative research can explicate the mechanisms behind racial/ethnic disparity in childhood overweight and identifying factors that influence energy balance [22, 23]. Thus, this qualitative study was designed to explore influences on physical activity of low-income, Latino preschool-aged children participating in the WIC program.

METHODS

Sample

As part of the Latino Preschoolers' Physical Activity (LPPA) study, we conducted six focus group discussions with Latina mothers (N = 33) whose preschool-aged children (2-5 years) were enrolled in WIC programs serving predominantly Latino populations located in the state of Rhode Island. Purposive sampling was used to recruit mothers of male and female children. Inclusion criteria included: being of Latino ethnicity, living in the three selected cities (Central Falls, Woonsocket, and Providence, which were selected for having a large percentage of Latino populations), speaking Spanish as the primary language at home, having a child between 2-5 years of age, and being currently enrolled in one of the participating WIC programs. We chose to recruit only mothers based on our prior experience of working with Latinos, and the fact that very few fathers have positively responded to recruitment efforts for our previous research with this population group and the fact that most Latino caregivers attending WIC appointments are mothers. Recruitment flyers were posted in WIC offices, and interested participants were mailed a recruitment letter (Spanish/English) *explaining* the purpose of the study purpose and requirements for participation and including a pre-addressed stamped postcard. Research staff contacted those who returned the cards by telephone to schedule the focus group.

A native Spanish speaker who was a trained facilitator conducted focus groups in Spanish. Focus groups were held at community health centers convenient for participants, and all participants provided written informed consent. Focus group discussions were audio-recorded, and participants

received a \$30 cash incentive (\$20 for the participation in a focus group and \$10 for transportation costs) and childcare was provided. The Internal Review Boards at the Harvard School of Public Health and the Rhode Island Department of Health approved the study protocol.

Procedures

A semi-structured interview guide including a series of open-ended questions and probes explored: (a) parents' perceptions, attitudes, and practices related to physical activity and sedentary behaviors; (b) influences of the family and home environment and socio-cultural factors (i.e., large sales forces within the Latino culture that affect the thoughts feelings and behaviors of individuals such as child rearing practices, cultural identity, ethnic identity and values, kinship and family structure, rituals, taboos, etc.) on physical

activity and sedentary behaviors; (c) potential barriers and motivators to providing a family and home environment conducive to developing and maintaining physical activity, and (d) suggestions on how the WIC Program can facilitate physical activity in the family/home environment. The interview guide had been pilot-tested with a Latina mothers enrolled in a WIC program in the Boston area. Participants also completed a self-administered socio-demographic questionnaire. A sample of questions included in the focus group guide is presented in Table 1.

Analysis

Standard methods in qualitative research were applied [24]. The discussions were audiotaped verbatim, and transcribed in Spanish and then translated into English by a bilingual, professional, independent consultant. Transcripts were reviewed by

Table 1: Sampling of Prompting Questions Used in Focus Groups

<p><i>Your Beliefs and Practices Related to Physical Activity</i></p> <p>What comes to you mind when you hear the phrase, "physical activity"?</p> <p>How does physical activity affect the health of a person?</p> <p>How does physical activity fit into your life?</p> <p>Are you satisfied with the amount of physical activity you do?</p> <p><i>On Physical Activity and the Health of Your Child</i></p> <p>How does physical activity fit into your child's health?</p> <p>How important is it to you that your child is physically active? Why?</p> <p>Are you satisfied with your child's level of physical activity?</p> <p>How do you encourage your child to be physically active?</p> <p>Do you think that your own physical activity habits influence your preschool child physical activity habits? How so?</p> <p>What is the most difficult thing in getting your children to be physically active?</p> <p>If you decided that you wanted to increase the level of physical activity of your child, how sure are you that you would be able to do it?</p> <p><i>On Physical Activity of Your Family</i></p> <p>How important is physical activity for your family?</p> <p>Does your family have specific family routines related to physical activity?</p> <p>How do you think your other responsibilities, like work, affect how physically active your children are?</p> <p>How does watching TV fit into your family's daily activities?</p> <p>If you were able to change one thing to make your family lead a more healthy life, what would you change?</p> <p><i>On Your Community and Physical Activity</i></p> <p>What are the places in your community where you are able to take your children to play?</p> <p>How safe do you feel playing with your children outside near your house?</p> <p>Are there physical activity or sports programs available for your preschool child in your community?</p> <p><i>On Your Culture and Its Influence on Physical Activity</i></p> <p>How important is physical activity and exercise in the Latin American culture and on how you were raised?</p> <p>In what ways does your native culture (Latin culture) influence your beliefs and practices related to physical activity?</p> <p>Are there any Latin American traditions or beliefs about physical activity? What are some of them?</p> <p>In what ways does the culture of your native country influence your and your family's physical activity routines?</p>
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an anthropologist (coder#1) to develop a codebook, and three researchers (including coder#1) independently read and manually analyzed transcripts using content analysis to identify similar phrases and common themes. Data were manually coded to create a data index. Inconsistencies in coding were discussed and resolved [25]. The socio-ecological framework guided the development of the focus group guide and emergent themes were organized by domains of the socio-ecological and social-contextual models [26, 27]. Descriptive analyses and frequencies were calculated from socio-demographic questionnaires using the SAS 9.2 software.

RESULTS

Participants

Table 2 Reports Socio-Demographic Characteristics of Study Participants

Approximately sixty-seven percent (22/33) of participants were foreign-born, and had lived in the U.S. for an average of 8.5 years. Participants' mean age was 29 years (range 23 to 37 years), and had an average of 2 children. About 33% were married, and about 70% had a high school degree. About 64% were employed outside of the home worked an average of 30 hours a week. Almost half (45.5%, 15/33) reported a household income less than US \$20,000/year.

The qualitative analysis identified key themes related to physical activity and sedentary behaviors of Latino preschool-aged children at individual, intrapersonal, organizational, and community levels. Themes are documented textually with illustrative quotes.

1. Individual-Level Influences

Mothers' Perceptions and Beliefs Related to Physical Activity

Participants described physical activity as engaging in organized activities, such as walking, swimming, and aerobics, or engaging in general activity throughout their day, such as spending time with their kids and cleaning. Participants used the terms physical activity and exercise interchangeably, although a few mothers perceived physical activity and exercise as distinctly different behaviors.

"...Well, for me physical activity is exercise, your body in movement because you do not necessarily need to lift weights and walk in the treadmill...it is mopping the floor, the body is moving..."

"Physical activity is any movement you do with your body. It does not need to be only going to the gym. Even if you are working around the house, cleaning you are being physically active"

Mothers' Attitudes Related to Physical Activity

Across all focus groups, most mothers recognized that being physically active could help promote a healthy weight, which could prevent obesity-related diseases. While most mothers equated physical activity with health, several cautioned that people who exercise too much are unhealthy and too thin.

"You have a better quality if do more physical activity ... in other words health. You are going to last more ... you are not going to die soon."

Table 2: Socio-Demographic Characteristics of Study Participants

	Mean	Percentage (N = 33)
Age	29 (22 – 37yrs)	
Marital status (married)		33% (11)
Education (> high school)		70% (23)
Foreign-born		67% (22)
Duration of Years in the U.S.	8.5 yrs	
Employed		64% (21)
Household income < \$20 K/year		45.5% (15)
Number of children	2.2	

"If you exercise it helps you stay in shape and not gain weight"

"I think for the kids it is very important that they are physically active. If they sit around too much, just watching TV and playing video game, they get chubby. I see that with my nephew"

Participants felt that among children physical activity was a way to use up energy, decrease hyperactivity, and increase calmness.

"I think that physical activity is the best thing for children because they're happy when they play outside, they like to be with other kids, play with other kids, run and that's good for them because they sweat and burn calories."

In all focus groups, several mothers stated that the amount of time children are physically active is important; however, only a few seemed aware of current physical activity guidelines for children. Mothers who knew of a daily time recommendation reported a recommended range of 15 minutes to 3 hours of physical activity per day. Some mothers felt that the amount of time a child should be physically active is age dependent.

"I think at least two hours ... "

"Two hours. I also think two hours..."

"I think it depends on their age; when they are young they move around all the time, non-stop. When they get a bit older they are not always active. So, I think it depends how old they are ..."

Across all focus groups, mothers often used the terms "hyperactive" and "physically active" as synonymous when discussing activity among their sons, although they viewed hyperactivity negatively. However, when probed on the difference between the two terms, participants' definitions of physical activity and hyperactivity differed with hyperactivity being described as having concentration problems, not listening, not being able to sit still, being difficult to control, or having a health condition that is treated with pills. Although most participants understood the difference between being very active and having behavioral problems, some mothers appeared to equate physical activity of boys with behavioral

problems and perceived negatively children who were very active.

"Hyperactive it's not staying still or messing things up or be somewhere screaming, yelling, jumping. However, being active is taking him/her to the park to run with them or ride a bike..."

"My son is hyperactive, he cannot sit still he is always moving. It makes me tired only looking at him. He is active all the time. He only stops when he is sleeping"

Cultural Beliefs on Gender Differences in Physical Activity Levels and Behaviors

Most mothers perceived boys as being more active, and stronger than girls. Girls were seen as being calmer and quieter than boys, and engaging in sedentary activities (e.g., coloring, reading). Several mothers commented on boys participating in sports and some mothers felt that their cultural upbringing influenced their views of girls and physical activity. For example, some mothers discussed that in their culture girls are not supposed to be involved in "boys' sports" (e.g., soccer, baseball), and girls are supposed to be "feminine". Only a few participants mentioned that boys and girls can be equally active or that girls are sometimes more active.

"... In the Latino culture we are raised to believe that boys are stronger and girls are more delicate and that's just the way they are meant to be ..."

"In our culture it's not nice for girls to be running around and being dirty, and looking like a boy ... they are supposed to look feminine and pretty ..."

"Girls play sitting down with their toys and boys are always running and running, non-stop. If they sit, it's only for a minute or two and then running again. Girls play with their dollhouse, their dolls, play kitchen and house. Boys are always jumping around."

Physical Activity Practices

Most mothers felt that their daily physical activity centered around activities of daily living, such as cleaning, doing chores, and engaging in child care activities (e.g., playing, bathing), and it was difficult to

fit physical activity into their own daily lives. Only a few mothers mentioned walking and participating in activities, such as biking or swimming. Several mothers felt that motherhood had changed their physical activity habits, and that it was easier to be physically active before they had children.

"The physical activity that I do is to clean up and do things around the house. But for me I think that is exercise ... I used to exercise but not anymore. My physical activity now is to clean my house, take care of my baby, and walk all the time to get things done."

"Before I had kids I used to exercise all the time. But after I had kids I stopped and all the exercise I do now is running after my kids, cleaning the house, and walking to the grocery store with the kids ..."

In most focus groups, mothers discussed how children are naturally physically active. Despite reporting that children are naturally physically active, several mothers also discussed sedentary activities such as coloring and playing video games as being a central part of their children's daily lives. In all focus groups, most mothers reported that watching TV was a central part of their preschool-aged children daily lives.

"You know when you are kid you are just always moving around. My kid is always running around the house. He has so much energy"

"She doesn't have a favorite physical activity; she likes to watch TV and coloring once in a while...just a few times she likes to ride her bike...mostly watch TV."

Most mothers wished that their children were more active. Some of the mothers who were dissatisfied with their children's level of physical activity also reported that their children were overweight and thought that increasing their children's physical activity levels would help their child achieve a healthful weight. Some other mothers felt that the cold weather prevented their children from being active.

"No [I'm not satisfied]... Because, I would like him to exercise more because he's a little overweight."

"No, because it would be nice to have a routine all the time. I would like it to be

different but I think that winter, because it's so cold, a lot of times you don't do certain things."

Parental Support for Physical Activity

When asked how they and other adults encourage their preschool children to be active, one strategy frequently mentioned was providing positive encouragement and compliments such as "keep going" and "good job".

"The kids run in the park and they line up and even if he's the last one to make it I tell him: You won! Bravo! Bravo! And he's happy and keeps running ..."

"My son loves to play soccer. He is crazy about soccer just like his father. So, when we go to the park and he plays soccer with the other kids, I always tell him how good he is and that if he keeps playing soccer like this one day he could be a good soccer player just like the ones he watches playing games on TV"

Support for physical activity was also mentioned by a few mothers, who spoke of enrolling their children in organized team sports or lessons (e.g., gymnastics, karate, swimming lessons).

"I had enrolled my son in karate lessons and he liked it, but then in the winter it became difficult to take him to the lessons since I don't have a car. I told him that maybe next summer I will register him in some sports team that I know will help him physically and other areas like discipline, coordination..."

"My daughter loves being in the water so last year I enrolled her on a swim class at the YMCA. She loved it!"

The majority of mothers, however, discussed wanting to enroll their preschool-aged children in organized physical activity programs, but not being able to afford such activities. Some mothers reported a lack of low cost or affordable programs for preschool aged children in their communities.

"There are not a lot of options for young kids ... you either go to places like Chuck E. Cheese and have to buy things or you need to enroll them in a program like

swimming at the YMCA, but everything costs money and you need to have the time to take them and it is during the day when I am working ..."

"Most of the programs at the YMCA are for kids that are older and in school. They don't have much for young kids. The only programs that they have are for the kids that are in day care there (at the YMCA)"

Parental Modeling of PA

Most mothers recognized that their own physical activity levels affected that of their children as their children emulate their activities. Overall, mothers agreed that parents are important role models for their children for everything including physical activity, especially when children are very young and spend most of their time with their mothers.

"I tell her let's ride the bike, because I like riding a bike. I do it and they want to do it also, so we go to the park, if not we go walking, or running to see who wins."

"When my son sees his father playing soccer with his friends he wants to play too. He asks me to take a soccer ball when we go watch his father play so he can also play like him"

Several mothers felt that they play an important role in promoting their children's physical activity and reported how being active with their children (e.g., playing ball, dancing, exercising) encouraged their child to be more active.

"...when my son sees my husband doing push-ups he wants to do push-ups too. Same with baseball...he sees his father playing and watching games and he wants to play too...role modeling starts at home."

"sometimes when I am home alone with my daughter I put on some music and we start dancing together. She loves dancing with me"

Barriers Preventing Physical Activity Among Kids

Nearly all mothers noted obstacles to their children being physically active. Noted barriers included the cold weather, financial and time constraints, and lack of safe places in close proximity to their homes. Many

participants discussed that they were less active in the winter than in the summer due to the weather and that during the cold months they and their children spent more time inside watching TV.

"I think in this country the most difficult thing is the weather because in the winter you can't take the kids out to play to release energy."

"We grew up in warm countries and being outside all the time. Here it gets very cold in the winter and all you want to do is stay inside. It's too cold to be outside playing"

Financial constraints also were seen as preventing children from being more physically active. Mothers felt that greater financial resources would allow their children and themselves to participate in more physical activity programs. Only a few mothers felt that finances did not influence their own and their children's physical activity level, with these mothers reporting having access to free activities for children in their communities and places to exercise.

"I think money because sometimes you are in difficult financial situations and you would want to do new things at home, new activities and because of the lack of money you can't. Sometimes you want to take them places, a new place for them to have physical activity and have the most fun but it all comes down to money. You can't take them if you don't have money."

"If I could I would put my son on a sports class but it is expensive and most of the money we make needs to go for paying rent and buying food, clothes for the children and there is never much left. If I had more money I would have my son in sports classes because I think he is really good"

In addition, transportation and lack of parks and playgrounds in close proximity to home and good conditions were cited as barriers to physically active.

"In my case, I don't have a car and where I live there isn't a park that is close by so it is difficult to get my son out all the time, so sometimes we just stay home ..."

"There is a park close to my house but it's not very nice and there is not a lot for the little kids to do. The swings are broken."

Across all focus groups, safety concern was seen as a major barrier to children being physically active, with almost all mothers feeling that their neighborhoods were not safe for their young children to play outside. Furthermore, some participants noted that their apartment buildings or streets were not safe and that they felt that their children were only safe if they were inside their house, in a gated area (e.g., playground) or if an adult was present at all times.

"Sexual predators... you get those notices because they live in your area... Then you get these notices and my son tells me, look mommy it's the nasty man and he shows me. And you get scared and you don't let them out... I don't let him out alone. I have to be in the porch or looking out the window."

"I don't feel safe letting my sons play outside if I am not with them. It's not safe because we live in an apartment building and to if I cannot go out with them, they need to stay inside"

Mothers' Self-Confidence in Promoting Increased Physical Activity in Their Children

Several mothers were not confident in their ability to encourage their children to be physically active, and this lack of confidence appeared to be related to feeling constrained by limited financial resources, lack of time due to work and other obligations, and limited access to space in which to be physically active. A few mothers discussed that their children were already active enough and did not require further encouragement from them.

"As long as I have all the resources, I feel certain of everything. But the lack of economic resources, time... that makes everything more difficult and complicated ... I can't say I can do something if I don't have the means to do it"

"I feel my son is very active. He is always moving and doesn't stop. I don't need to tell him to go an play, in fact, some times I need to tell them to quiet down and sit for awhile and get some rest."

2. Interpersonal Influences: Family and Home Environment Influences on Children's Physical Activity

Family and Household Obligations

In all focus groups, mothers discussed how family obligations and daily home routines influenced their own and their preschool-aged children's daily activity levels. Almost all mothers reported that having to work long hours and completing household chores prevented them from being physically active and interfered with having time with their children and having free time to spend outdoors. Mothers felt that these competing demands resulted in children not being physically active and families resorting to sedentary indoors activities such as TV watching, playing with computers and video games.

"I work here from Monday to Friday. The only days I have to spend with them are Saturdays and Sundays because when I get home I clean, cook... around 8 or 9 PM I am not going to take them out. The next day they have to get up early."

"I would like my kids to be more active and play outside more but I have to get things done around the house, go shopping so sometimes there is not enough time for them to play outside"

A few mothers discussed that play dates with other children of similar age is a helpful way of increasing their children's physical activity levels. These mothers felt that having social support from other mothers is a motivation and a support system to making sure that their children are physically active. As one mother mentioned:

"... especially during the winter if we could find other families in the community who have children of the same age to do a play group or to have play dates would help... especially like mine, he is alone ..."

"when my cousin lived near us we used to go out a lot together with the kids. Some times if I was busy she would take my kids and some times I would take hers. But now I am alone and its hard. Some times I think I am going to go out to the park with the kids but then I think of going only me and my two kids, and I decide to stay"

home. It's easier if you have someone with you. Also for the kids, its good to have other kids to play with"

TV Viewing

TV viewing emerged as an important part of families' daily lives. Many mothers reported that they often had the TV on the news and children's shows during the day and night. The majority of working mothers reported resorting to the TV as a way to keep their children entertained while they took care of household chores.

"I get home, my son has to take his clothes off and the first thing he does is sit in front of the TV... I don't even take my uniform off, I start cooking, prepare meals, set the clothes for the next day, prepare lunch for my husband, for me, for my son...So before I know it it's already eight o'clock, so what time do I have to do things with my son. The next day I have to wake up early to do the same."

"I always have the TV on when I am in the house, cleaning and cooking. It's easier to get the things done if they are entertained and occupied and don't keep coming and asking you for things every 5 minutes ..."

3. Organizational Influences on Physical Activity: The Role of the WIC Program

When asked how the WIC program influenced their preschool children and family's physical activity, most felt that it had little impact. Participants spoke of WIC program focusing on child nutrition, although a few mothers mentioned that during their WIC counseling sessions WIC staff would ask about their child's TV viewing habits and recommend limiting the amount of TV their child watches. Several mothers felt that WIC program could create an educational program to support and promote physical activity among Latino preschool-aged children and suggested that WIC either add program or delete program in earlier mentions provide information and education about physical activity through printed materials (e.g., flyers, brochures, booklets), workshops and classes, and sponsor community events to inform Latino parents of community-based physical activity resources. Furthermore, a few mothers believed that WIC could be instrumental in helping children and families get subsidized memberships to places where their families

could be physically active (e.g., YMCA). Several mothers mentioned that if WIC was to offer programs it would be important that these programs be in close proximity to their homes, and that the programs should include parents and children, and emphasize the importance of adults as role models. They also believed the programs should educate parents about the importance of spending time playing and being active with children.

"They should promote more for example the sites/places where people can go. Maybe they could subsidize community places to make them more accessible for people that would be good... I think."

"I think we need programs for parents and children to be active together ... It would help parents to become more involved in their child's physical activity as a role model."

4. Community-Level Influences on Physical Activity

When asked to discuss places that are available in their communities for preschool children to be physically active, most mothers mentioned local parks, their own backyards, community centers, and the YMCA. Although many mothers mentioned parks being located near where they live, a few mothers felt that there were no of parks or places where children can play in their communities. These mothers felt that increased access to parks would promote increased physical activity for their children.

"If there is a park nearby, we can take them every day but sometimes you don't live near those parks and you have to take the bus and sometimes they don't go by the parks..."

"There is not much around where I live for the young kids to do. There is a small park that is a couple of blocks away but a lot of the kids who go there are older and I don't like to have my kids playing around when all the teenagers are there ..."

Although a few mothers reported that there were sports and physical activity programs for young children in their communities, most felt that there was a lack of programs for preschool-aged children. Mothers felt that available programs were geared towards older children, and that there is need for programs and

activities that are geared towards young children and parents.

“Where we live...they have a gym...that is where the afterschool meets... But it is only for older kids. We need programs for younger kids”

DISCUSSION

The purpose of this study was to examine the complex influences on physical activity behaviors of Latino mothers and their preschool-aged children. Theory-driven qualitative approaches are essential to understanding and intervening on disparities in pediatric obesity [17]. Our findings suggest that low-income Latino mothers face numerous barriers to establishing and maintaining healthful physical activity habits for their preschool-aged children, particularly financial and time-related barriers, compared to higher income families.

Emergent themes reflect the applicability of the social contextual model that relates social class and culture to multiple levels of influence on families [26-29]. Our findings that mothers' beliefs, perceptions, responsibilities, and resources appear to strongly influence preschooler's physical activity support the need of targeting parents as mediators of change in any strategy aimed at affecting children's physical activity. Results of this study supports our previous research and findings from other studies showing that the family is an important and powerful unit of change within Latino communities and must be taken into account when designing interventions for this population [30-32]. This finding suggests that physical activity promotion interventions targeting Latinos will not be successful without considering parents and children as a complete unit and that interventions and programs need to address barriers to physical activity faced by Latino families, as a whole [28].

Our results revealed a range of perceptions and beliefs of Latino mothers related to both their own physical activity as well as that of their preschool children. Mothers felt that the amount of time children are physically active is important, but most were unaware that current guidelines recommend that children participate in 60+ minutes of moderate physical activity daily, indicating the need for basic education about physical activity [33]. Interventions should therefore address Latino parents' knowledge of and attitudes towards physical activity including not

only the importance of physical activity for their children but also daily requirements and the importance of parents' attitudes towards physical activity. Brief and culturally appropriate messages such as posters, etc. may be an effective way to increase Latino mothers knowledge about the daily recommendations of physical activity as well as examples of simple daily physical activities for their young children.

Our findings revealed that only a few mothers reported using positive reinforcement to encourage their children to be physically active, but among participants using positive reinforcements this was seen as having a positive impact on their children physical activity levels. Previous research suggests that parenting styles including positive reinforcement, monitoring, prompting and instruction influence children's activity behaviors examining parental and peer prompting of physical activity at home between Mexican-American and Anglo-American children at age 4 years and again at 6.5 years [34, 35]. This finding in combination with our findings suggest that physical activity interventions targeting Latino parents should incorporate parenting practices such as positive reinforcement and prompting.

The majority of Latino mothers' participating in our study felt that their physical activity levels influence that of their children, which is congruent with findings from previous studies [15, 18]. Nevertheless, some participants did not see a correlation between their physical activity levels and that of their children, suggesting that physical activity interventions should emphasize the importance of parents' physical activity levels and children's modeling of parental and familial behavior.

Our findings indicate the influence of cultural beliefs on physical activity habits of young Latino children. A few mothers discussed perceived gender differences in physical activity, with the majority of participants reporting that boys are more active than girls and participated in more sports and moderate-to-vigorous physical activity, consistent with findings from another study of Hispanic mothers of preschoolers [36]. Programs designed to promote physical activity among young Latino children should emphasize in a culturally-sensitive manner that all sports are good for boys and girls alike.

As with previous research, our findings revealed that television viewing plays a large role in the daily lives of Latino families [30, 37]. The amount of time

participants reported their preschool children watching television varied greatly and ranged from 'very little' to five or more hours a day, with only a few mothers reporting setting limits on the amount of television time. These findings align with analyses of the 1988-1994 National Health and Nutrition Examination Survey that determined that 33% of Mexican American watched at least 4 hours of television per day [38]. Increased TV viewing is associated with decreased physical activity [30, 37, 39, 40]. Although WIC staff sometimes assesses TV viewing and inform parents of the importance of limiting TV, our findings suggest that WIC could expand their work in this area and help parents identify alternatives to watching TV.

Our findings revealed a number of barriers low-income Latino children and families face to being physically active, including financial constraints, which is consistent with studies demonstrating that low socio-economic status may be a risk factor for overweight children [41-43]. In agreement with previous studies, lack of time due to family and work obligations also emerged as an important barrier, keeping Latino families and their children from being physical activity [44]. These findings highlight the need to develop economically and culturally sensitive programs for immigrant and ethnic minority families to promote greater engagement in physical activities.

Mothers also reported that cold weather prevented preschool-aged children from being physically active, and contributed to time spent in sedentary activities, which is congruent with results from other qualitative studies [42, 43]. In geographic regions with cold winters, interventions should address weather and present opportunities for physical activity indoors (i.e., local ice skating rinks, community space with indoor basketball courts) and for weather-appropriate activities (i.e., ice-skating). Furthermore, culturally-appropriate programs could promote awareness among Latino mothers of the importance of children spending time outdoors even during the cold weather and about dressing children for the cold weather, including where to find inexpensive winter clothing and activities that children and families can engage in together during the cold months.

Mother's viewed lack of safety of their neighborhood negatively impacted their children's physical activity spending a lot of time indoors. Neighborhood safety is an important influence on children's physical activity levels [4, 5, 42, 45, 46]. Minority and low-income parents and children, like the individuals participating in

this study, are more likely to live in communities where safety is an issue [45, 47, 48].

In this study, limited availability and access to community facilities such as parks and playgrounds also was cited as a barrier physical activity. These findings are in agreement with existing research documenting how neighborhood structure and services that provide physical activity opportunities are correlated to children's levels of physical activity [13, 49]. Study findings suggest that successful interventions to increase physical activity among low-income, Latino children and their families should consider increasing access and availability to safe community areas where low-income Latino families and their children can play and be physically active.

Our findings are in agreement with results of previous studies implemented in the WIC setting showing that enhanced access to places for physical activity combined with information about activities for children is effective in increasing physical activity and decreasing sedentary behavior such as television viewing [50-53]. When describing their experiences with the WIC program, most participants emphasized that program's focus is on healthy eating, with little attention given to physical activity. Participants wanted information on resources and activities in their communities for physical activity and opportunities where mothers with preschool-age children can get together for their children to play. Previous research shows that parents need to have the necessary knowledge, motivation, and support to promote increased physical activity for their children [54]. These findings suggest that WIC could play an important role in raising awareness about the benefits of physical activity and ways to incorporate physical activity into daily life. The WIC program could also provide information on places and resources in the community where Latino children and their families could be physically active.

Although all participants were mothers of children aged two to five years and the focus group guide was developed to explore the influences on preschool-aged children's physical activity, mothers often discussed their physical activity beliefs, perceptions and practices within the broader context of the family. These results indicate that effective program designed to promote and increase physical activity of young Latino preschool-aged children need to be family-centered and recognize the fundamental role that parents play in

shaping their children's development of physical activity behaviors [30, 32, 55].

Results of this study should be considered in light of its limitations. First, the qualitative nature of the study limits generalizability; however, the multi-ethnic composition of participants in focus groups strengthens the potential applicability to several Latino population groups. Second, mothers who enrolled in this study may have been systematically different than mothers who did not participate. Finally, the nature of study does not allow for exploring connections between mothers' perceptions and the actual physical activity habits of their preschool children and does not allow for quantifying levels of physical activity of mothers and their children. Future research should explore possible associations between Latino parents' perceptions of and physical activity levels through a mixed methods approach that combines qualitative and quantitative methods. There is a need to develop, implement, and evaluate community-based, family-centered interventions that address both financial and environmental barriers to physical activity while providing opportunities for low-income, Latino preschool-aged children and their families to be more physically active.

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