

Latino mothers' beliefs about child weight and family health

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Abstract

Objective: There is a need to address cultural beliefs and parenting practices regarding childhood obesity to design effective weight-control programmes for overweight/obese US Latino children. The purpose of the current study was to explore cultural beliefs about children's weight, understand parent perceptions on feeding their children, and explore barriers that interfere with a healthy lifestyle.

Design: Four focus groups were conducted in Spanish with forty-one Latino mothers of elementary school-age children from San Diego County, California between April and May 2011. Cultural viewpoints about overweight status among children and barriers to leading a healthy lifestyle were explored. Focus group discussions were analysed based on *a priori* and emergent themes.

Results: Three themes were identified: (i) mothers' cultural beliefs about health that are barriers to family health; (ii) mothers as primary caretakers of their family's health; and (iii) attitudes about targeting children's weight. Mothers acknowledged the idea that 'chubby is better' is a misperception, yet having a 'chubby' child was preferred and even accepted. Mothers described fatalistic beliefs that contradicted existing knowledge of chronic disease and daily demands of Western culture as barriers to practising healthy behaviours in the home as the family caretaker.

Conclusions: These findings may be used to inform more culturally appropriate research to address US Latino health. Increasing awareness of cultural beliefs and daily circumstance could help to address obesity more directly and thereby overcome some of the potential underlying barriers that might exist when involving the Latino immigrant families in obesity treatment and prevention.

Keywords
Latino mothers
Focus groups
Family health
Childhood obesity
Cultural beliefs

The USA and Mexico have the highest obesity prevalence in the world^(1,2). In communities closest to the San Diego/Tijuana border, the childhood obesity prevalence ranges from 38 to 50%⁽³⁾. Obesity and obesity-related diseases are also disproportionately high in US–Mexico border regions^(4,5). The obesity epidemic among Latino children is concerning because they are the fastest growing US ethnic group and will more than double by 2060⁽⁶⁾.

To make an impact on childhood obesity among Latino children, there is a need to increase understanding of parental perceptions of child weight as well as barriers to practising healthy eating. Parents play a fundamental role in shaping child health behaviours^(7,8). When parents role model healthful eating and physical activity, children are more likely to demonstrate similar behaviours^(9–11). Family-based treatment, the current gold standard for treating childhood obesity, focuses on nutrition and physical activity through behaviour therapy and parenting skills, which is delivered concurrently or simultaneously to both parents and children^(12,13). Epstein and colleagues reported that one-third of children who participated in

obesity treatment programmes were no longer overweight in adulthood⁽¹²⁾. These programmes, however, were evaluated in fairly homogeneous non-Hispanic white populations. Given the differences inherent in Latino culture (i.e. more family-centred with traditional norms and beliefs) and parenting strategies compared with whites^(14,15), a 'one-size-fits-all' approach may be neither effective nor culturally appropriate when treating overweight/obese Latino children.

Latino parents' sociocultural perceptions around obesity may be important to consider when designing treatment options for families in US–Mexico border communities. The border region presents a unique context where neither culture, Mexican or American, may be completely embraced. 'Growing up Latino' on the US–Mexican border has been described as to 'live in the center being able to accept both [cultures]. These cultures cross each other, not to assimilate but to transculture'⁽¹⁶⁾. Thus, Latinos in US border communities may be accustomed to the American lifestyle (e.g. eating take-out and/or processed foods), but also maintain traditional Mexican viewpoints

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and behaviours (e.g. valuing the home setting/family unit, traditional foods, health beliefs)^(17–20). It is important to understand which traditional views and practices are maintained among Latino mothers in US–Mexico border communities and the impact on healthy lifestyles.

Given the potential differences in Latinos' views and practices around obesity, using programmes for weight control developed and validated in white children might prove to be challenging. Identifying and addressing how cultural attitudes and practices influence a child's environment and a mother's ability to make changes may help to improve such efforts. The present study aimed to explore cultural beliefs about children's weight, to understand parental views on and perceived barriers to feeding their children, and to explore barriers that interfere with a healthy lifestyle. Findings may be used to inform the cultural adaptation of existing interventions designed for weight loss among overweight/obese Latino children.

Methods

Setting and participants

Between April and May 2011, we conducted four focus groups⁽²¹⁾. Latino parents (mothers and fathers) were recruited using convenience sampling through flyers distributed in two low- to middle-income elementary school districts and Spanish-language parent groups in East and South San Diego County, California. All parents of elementary school-aged children who responded were allowed to participate, resulting in a total sample of forty-one mothers. Participation among fathers was low ($n = 1$) and therefore not included in the analysis. Upon completing the focus group and a short questionnaire, mothers received a \$US 20 gift card. The study was approved by the Institutional Review Board at the University of California, San Diego.

Design

Focus groups were conducted in Spanish, consisted of ten or eleven participants, and lasted 1–1.5 h. Two occurred at an elementary school (East San Diego School District) during morning school hours and two occurred at the school district office (West San Diego School District) during after-school hours. Prior to starting, facilitators reviewed the informed consent process and each mother completed an informed consent form. A self-administered questionnaire that assessed maternal demographics including age, education, income and employment status was administered prior to the start of the focus group discussion.

Procedure

Focus groups were facilitated by two Mexican-American bilingual (Spanish/English) researchers trained in

Table 1 Focus group guide for Latino mothers of school-age children in San Diego County, California, April–May 2011

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1. In your community, what do people think about childhood obesity?
 2. In your community, what do people think about weight loss?
 3. Where do people go to find information on diet and exercise?
 4. Are there any people trying to lose weight? What are some reasons why people don't lose weight?
 5. When is it okay to target a child's weight?
 6. What types of foods do you eat at home? What are some reasons why people don't eat healthily?
 7. What type of activities do you do for exercise? What are some reasons why people don't exercise?
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qualitative methods and experienced in running focus groups. Each facilitator had a bilingual note taker, who assisted with follow-up on questions. Facilitators followed a focus group guide to explore beliefs about child weight status and current behaviours related to eating and physical activity (see Table 1). The guide was developed using a social-ecological perspective and included the following topics: (i) beliefs about overweight status among children; (ii) perceptions about targeting children's weight; and (iii) reasons why people do not live a healthy lifestyle. As described in Martinez *et al.*⁽²¹⁾, focus group discussions were video- and audio-taped. Audio recordings were transcribed. Videotapes were used for audio backup, to quantify hand raises when asked their country of birth, and head nods were noted to confirm emergent themes that were verbalized by participants, indicating that mothers were in agreement with other participants' statements.

Analytic strategy

Focus group discussions were transcribed verbatim. Only the quotes included in the current article were translated into English and backtranslated to Spanish. Transcripts were independently coded for major themes by the first and second authors (two bilingual experts in qualitative methods) to develop a reliable coding scheme, using the principles of grounded theory. First, one investigator (S.M.M.) read all transcribed focus groups and applied the principles of microanalysis⁽²²⁾, which calls for an in-depth analysis of the text to generate initial themes to create a preliminary coding scheme. Then a second investigator (E.B.) applied the initial coding scheme to each transcription. Following this process, the investigators together refined the coding scheme, discussed new emergent themes using the constant comparison method⁽²²⁾, and reached consensus on the definition and application of each code. Codes were associated with segments of dialogue either based on *a priori* (i.e. questions asked in the focus group) or emergent themes (i.e. central ideas from the data). Multiple codes could be applied to the same segment of dialogue. Both investigators coded each focus group and discussed any coding discrepancies. We used

the qualitative data analysis software, Atlas.ti 6.1 (2011; Scientific Software Development GmbH, Berlin, Germany), to organize codes and their sub-categories. The statistical software package PASW Statistics Version 18 was used for descriptive statistics.

Results

Participant characteristics are reported in Table 2. Mothers were mostly Mexican immigrants with a mean age of 41 years. Three themes emerged from the focus group discussions: (i) mothers' cultural beliefs about health as barriers; (ii) mothers as primary caretakers of their family's health; and (iii) the appropriate time for targeting children's weight (Table 3).

Theme 1: cultural beliefs about health that are barriers to family health

Chubby is healthy

Mothers described a cultural belief that 'chubby is healthy'. Mothers reported that skinny children were perceived as malnourished and often teased by their peers. Despite these beliefs, some mothers acknowledged that this was a misperception that needed to be corrected in their community because there were harmful consequences of being overweight/obese, such as poor self-esteem and social stigma. Some mothers blamed parents of overweight children, with one mother blaming herself and saying, 'I am obese and I am sending my son down the same road.' Although weight was a growing concern,

mothers reported that in the community, they often heard comments like 'my child is happy that way', reflecting conflicting views on this issue.

Some mothers acknowledged that their child had a weight problem, but because being chubby was the preferred body habitus, they accepted their child's overweight status and used diminutive terms like 'fluffy' (*esponjadito*), 'plump' (*llenita*) or 'little tummy' (*pancita*). Only a few mothers used the terms 'fat' or 'overweight' (*gordito*) and some mothers struggled to label their child's weight status. One mother hesitatingly said, 'She [daughter] is ... is really tall for her age, but she is ... a little ... she's overweight.'

Finish everything on your plate

Stemming from the belief that wasting food is not good practice, many mothers encouraged children to 'finish everything on your plate'. Mothers reported that this was common practice in their own upbringing. Mothers discussed that leaving food on their plate as a child was unacceptable and jokingly reported that Latinos invented this eating rule. Consequently, mothers reported that even if they fed their child adult portions, they expected them to finish their plate; they did not realize that children should eat less.

Cultural barriers to family health

Although mothers were accustomed to staying home and caring for the family, mothers reported the 'current economic conditions' made it necessary for both parents to work. This, in turn, created a challenge to eating healthily and being physically active because there was not enough time in the day to go to work

Table 2 Sociodemographic characteristics of focus group participants in Region 1* and Region 2*; Latino mothers of school-age children in San Diego County, California, April–May 2011

	Total (n 41)		Region 1 (n 20)		Region 2 (n 21)		P value
	Mean or n	SD or %	Mean or n	SD or %	Mean or n	SD or %	
Age (years), mean and SD†	40.7	6.7	37.3	3.7	44.0	7.3	0.07
Age group							
32–39 years	19	49	14	74	5	25	
40–49 years	17	43	5	26	12	60	
50–62 years	3	8	–	–	3	15	
Married/living as married	30	73	17	85	13	62	0.10
Education‡							0.24
< High school	16	42	9	53	7	33	
High school/equivalent	12	32	3	18	8	43	
> High school	10	26	5	29	5	26	
Unemployed/homemaker	23	56	11	61	12	57	0.80
Yearly household income†							0.08
≤ \$US 20 000	14	41	8	53	6	32	
\$US 20 001–40 000	15	44	7	47	8	42	
> \$US 40 001	5	15	–	–	5	26	
Country of birth‡							–
USA	3	9	–	–	3	14	
Mexico	36	88	20	100	16	76	
Argentina	2	5	–	–	2	10	

*Region 1, East San Diego School District; Region 2, West San Diego School District.

†Missing data: two participants did not report age; three participants did not report education level; seven participants did not report income.

‡Country of birth was obtained by hand raising during the focus group.

Table 3 Themes and key quotes related to Latino mothers' beliefs and practices about child weight status and family health in San Diego County, California, April–May 2011 (*n* 41)

Themes	Quotes
1. Cultural beliefs about health that are barriers to family health	<p>Chubby is better</p> <p>'We [Latinos] have the belief that before a chubby or obese child ... was a healthy child.'</p> <p>'... we [Latinos] were raised ... that chubby children are healthy But that's an error.'</p> <p>'Well we [Latinos] come from ... an upbringing that ... chubby children were healthier in times from before, in our parents' time ...'</p> <p>'... my grandma raised us and she always said a chubby child is healthy, and for our family, a chubby child is always healthy.'</p> <p>Finish everything on your plate</p> <p>'... when I was growing up my dad was from the generation that "you finish everything on your plate, because there aren't any dogs here" – that's what he would tell us.'</p> <p>'I think that in our culture we still have the belief to finish everything on your plate.'</p> <p>'I was raised like that [finish everything on your plate], but even worse: "You don't like that? Then you get double portions."</p> <p>Cultural barriers to family health</p> <p>'I've always cooked I came to the US Then I saw that the moms over here [in the USA] are not accustomed [to that]. They work. They can't do so many [things]. Since [my children] were born, they've eaten home-cooked meals ...; over here the whole world buys [food in] cans [and] jars. They warm it up; they put it in the micro. That's what they eat.'</p> <p>'... there is more fast food than there are recreational parks ... on every corner.'</p> <p>Fatalism</p> <p>'In my house they say, "why are you eating that [healthful foods] if one is going to die?"'</p> <p>'... we are going to eat this ... because in the end, we're going to die from something ...'</p> <p>'Also, in Mexican culture we [have the excuse] that "it's hereditary – he's chubby because it's hereditary."</p> <p>'If they [participant's children] are going to suffer [from diabetes] in the future, it's because of inheritance, but not because I'm not putting the food that my children should be eating on the table.'</p>
2. Mothers as primary caretakers of their family's health	<p>Mothers as family caretakers</p> <p>'... in our culture, the mother ... is in charge of the family, we are selfless; the children come first, the husband comes first ... and [we] are last We are used to doing our chores and we are not culturally accustomed to going out for a walk or doing some type of exercise with [the children].'</p> <p>'In Mexico, the majority of the time the woman doesn't work, but rather stays home with the children, and over there the daily nutrition was better, because in Mexico you cook ...'</p> <p>'... sometimes we have to wait for an illness to come before making changes in the home.'</p> <p>Family-centred activities encourage mothers to support their family's health</p> <p>'Yes, your tummy will go away ... you have to walk with mommy.'</p> <p>'What I've done with my children is – we walk. They walk to school, to their friend's house, we walk to the library, and we get involved with our children to do exercise ...'</p>
3. Attitudes about targeting children's weight	<p>'[Obesity prevention starts] Right now ... she's little, she's not fat but she's starting to be, so I think to myself: skates, bicycle.'</p> <p>'They [physical activity and diet] go hand in hand, exercise with nutrition.'</p> <p>'One of the things that I would like to learn is how to motivate them [children] to eat this [healthy food] without telling them, "you have to eat this so you can be like Barbie", because that results in anore[xia] ... and other illnesses.'</p> <p>'I don't think there is ever an age to start exercising; all kids need to have an activity.'</p>

and cook meals. Furthermore, they expressed that American life demanded 'too much routine' (e.g. wake up, take kids to school, go to work/housework, pick kids up from school/aunt/grandparent's home, do homework, make dinner, put the kids to sleep), with little help from family and friends. These time demands pushed them towards purchasing ready-made juices and foods although they were accustomed to making fresh juices/*aguas naturales* and home-cooked meals. Some mothers expressed that they struggled to cook traditional foods and gave in to fast food, which was abundant in their community. In addition, mothers discussed that in the USA, because mothers had to work, there was a culture of buying foods in cans and jars that could be heated

in the microwave – a cooking behaviour that was foreign to them.

Fatalism

Mothers reported that fatalism got in the way of supporting healthful eating. The most common cultural belief among participants was that Latinos are predisposed to chronic health conditions, specifically diabetes and being overweight/obese. Therefore, death from these diseases was inevitable and eating or acting in a more healthful manner was not worth the effort. Some mothers spoke about attempting to prepare wholesome foods for their families, which were not always well received however, yet they

did not want to be accountable for contributing to the development of diabetes in their family.

Theme 2: mothers as the primary caretakers of their family's health

Mothers as family caretakers

Mothers reported that their traditional Mexican role included the primary responsibility for feeding their family and making sure everyone was healthy. Due to time constraints and daily demands, however, mothers had less time to cook, clean and tend to their family's needs compared with the past when they lived in Mexico. In this vein, mothers discussed struggling to maintain this maternal role. As a result, there was no time to be physically active with their children, especially since it was not a primary responsibility.

Despite their struggle to maintain the maternal role as caretaker, some mothers mentioned that they sought advice for a family member's health condition and acted on this information by implementing changes for the entire household. When given a cause or mandate for changing behaviours (like helping a child lose weight or control diabetes), some mothers were pushed towards taking charge and making positive changes in the way they prepared meals. For example, controlling diabetes for a family member was a responsibility that facilitated radical, yet healthy dietary changes for the whole family among several families. Mothers, as the primary family caretaker, would then act to promote more healthful behaviours in the home.

Family-centred activities encourage mothers to support their family's health

Most mothers discussed not being accustomed to being physically active with their children, but when discussing practices that helped them to be physically active, some mothers revealed that they preferred family-centred (*familismo*) activities. Specifically, walking was discussed as an activity that could involve the whole family. For instance, some mothers walked with their children to/from school, walked the dog daily and walked for leisure. A few mothers made the connection between physical activity and weight loss, and used encouragement and support for physical activity to promote family health. Indeed, mothers described that an ideal obesity programme would incorporate the whole family and provide activities and suggestions in which the whole family could be involved.

Theme 3: attitudes about targeting children's weight

Mothers seemed to be conflicted regarding targeting childhood overweight and obesity. Some mothers shared that it was a good idea to start obesity prevention at an

early age. Others spoke about the connection between diet, physical activity and preventing chronic disease. Some mothers, however, did not think that weight-loss efforts like dieting or exercise were necessary. Instead they viewed exercise as just being active and that it should be incorporated into their daily life. Some mothers offered that there is a proper time to target weight, but did not identify when or at what weight status that should begin. Nevertheless, mothers reported an overall need for caution when treating obesity. Treatment was interpreted as dieting and mothers expressed concern about sending messages that could create anxiety and result in eating disorders like anorexia, bulimia or emotional eating.

Discussion

The present study contributes to the understanding of cultural perceptions about children's weight and barriers to practising a healthy lifestyle among Latino mothers of a US–Mexico border region. Mothers described cultural beliefs and traditional roles that contradicted existing knowledge about chronic disease. While they acknowledged the idea that 'chubby is healthy' was a cultural belief, and that childhood obesity was a serious problem, they still felt that was acceptable for their child to be overweight. Barriers, including feelings of fatalism and pessimistic attitudes about practising healthful eating behaviour, interfered with their responsibility for looking after their family's health. The time demands of Western culture also made it difficult for mothers to continue with their traditional practices and desire to be the caretaker for the family. These findings highlight new information about cultural beliefs about children's weight, and maternal views on and perceived barriers to feeding their children, and explore barriers that interfere with a healthy lifestyle. Recognizing these beliefs and struggles could allow us to develop new approaches or tailor current ones to address these issues and improve weight-control efforts in this population.

Similar to other studies^(23,24), we found that many mothers were raised with the cultural mindset that, for children, 'chubby is healthy'. Historically, overweight status has often been perceived as a sign of prosperity⁽²⁵⁾, and this may partly explain why mothers in the present study were raised with the mindset to 'finish everything on your plate' and not waste food, especially if resources were limited. Nevertheless, mothers' traditional and cultural views about parent feeding and child weight were challenged by their own feeding practices and views about health. This shift in beliefs may be explained by acculturation or exposure to the attitudes about obesity in the USA, which includes increased social awareness of health-related issues associated with obesity. Despite the shifting beliefs, many mothers had trouble accepting their

own children as overweight/obese and avoided doing so by using innocuous terms, falling back on their cultural beliefs. The differing attitudes of knowing that being overweight is unhealthy in one culture but accepted in the other, illustrates how Latinos living on the US–Mexico border live in the middle of two cultures and perhaps accept views that most suit them. This conflict may prevent Latino mothers from taking early action to address childhood obesity. Improving weight-control and prevention efforts requires shifting this viewpoint towards one that recognizes that having an overweight child sets the stage for lifelong chronic disease and overrides the positive traditional beliefs about ‘chubby’ children.

Additionally, mothers discussed that in the USA, there was a culture of convenience foods, and they associated this fast-food culture with mothers trying to meet daily demands of American culture, like having to work and be caretaker instead of being able to be at home to prepare home-cooked meals and care for the family. In this way, mothers seemed to struggle between the two cultures: being traditional *v.* conventional. Others have also observed a similar conflict among Latinas living in the USA⁽²⁰⁾. Agne *et al.* found that working Latinas reported resorting to convenience foods that were fast, but also noted that canned, frozen and pre-packaged foods were more accessible compared with the availability of fresh foods in the native country. Despite the heavy focus on obesity prevention in the USA, the food environment challenges such efforts. These Latino perspectives draw attention to the American culture that has lost touch with real food and highlight the need for an American food system where foods are not pre-packaged, but are unprocessed, natural, accessible and affordable. Furthermore, these views raise questions about whether cooking practices in American homes are disappearing in today’s modern family due to a demanding culture. Drawing from Latino culture could be beneficial in programmes that focus on family dining and home cooking in American families.

The majority of mothers in the present study were married or living with a partner, which highlights their family caretaker role and the cultural importance of family structure. Because mothers embraced the traditional responsibility of family caretaker, targeting this role seems vital for increasing engagement in weight control. Some mothers in our study were making drastic family lifestyle changes, having sought nutritional information and counselling for weight loss or diabetes maintenance for themselves or a family member. To increase this behaviour, messages and recommendations should be framed in such a way that resonates with maternal cultural beliefs and traditions, but allows them to challenge outdated beliefs such as a ‘chubby child is a healthy child’.

However, targeting Latino mothers as the agent of change requires recognition of their struggles with traditional *v.* modern convention. Mothers in our study

reported being accustomed to having more time in their native country where they did not have to work and had time to prepare and provide wholesome meals (e.g. home-cooked meals, steamed rather than fried foods)^(21,26). Some mothers mentioned that they had to work now that they lived in the USA, which undermined their traditional way of cooking and eating. Due to scheduling demands, mothers gave in to the convenience of ready-made foods and fast food. Interestingly, slightly more than half of mothers in the present study were homemakers and yet time still remained an issue. Perhaps living in a Western society where life is structured and regimented around time pressures and a lack of family support may have made life seem more demanding compared with when they lived in Mexico. Scheduling demands (e.g. children’s school schedule, transportation issues for getting children to and from school and running errands) may have added pressure to their daily lives in the USA. Helping mothers deal with daily time pressures by implementing some pre-planning and affordable shopping/cooking strategies may enable them to prepare easy home-cooked meals and still feel like they are providing for their family. Addressing this issue is important given that immigrant mothers were accustomed to a lifestyle without time constraints and possibly more family support.

Despite the emphasis on mothers as the caretaker of the family, they should not be the sole focus of behaviour change. As a culture, Latinos strongly uphold familism (strong identification with and attachment to their nuclear and extended families)⁽¹⁷⁾. Emphasizing family health may help to overcome fatalistic attitudes around obesity and healthy eating and activity behaviours. By encouraging family physical activity, mothers can enlist the support of other family members while still spearheading the effort to keep their children healthy. Teaching mothers to enlist family members to help in the cooking process may also promote familism and allow for more healthful meal options for their family. Mothers can then still feel like they are taking care of their family and being responsible for the health of their children. A recent study of Mexican-American families showed that fathers’ feeding practices influenced their children’s weight status⁽²⁷⁾, suggesting that fathers are also an important target for interventions. Teaching mothers and fathers how to encourage healthful behaviours as a family may help to alleviate some of the pressure that mothers feel by sharing the responsibility with fathers. While mothers have the knowledge to practise new health behaviours, some of the barriers involve resistance from the family. Incorporating fathers and other senior members of the family to help in the caretaking process may help to address this challenge and increase the adoption of healthy eating and activity behaviours among the children.

Finally, obesity treatment/prevention programmes may need to address fatalism around chronic disease if they are to successfully engage families in health behaviour

change. Studies are just beginning to understand fatalism in the context of health behaviours and suggest that these feelings are deep-rooted in the social-cultural context of disempowerment rather than a cultural trait^(28,29). Nevertheless, in the present study, fatalism was one reason why families took minimal action to improve their health. Emphasizing familism in relation to health may help to overcome fatalistic attitudes about health and move Latinos towards a sociocultural attitude that values primary prevention for family health. Capitalizing on the mother's role/desire to be family caretaker and focusing on the family's health may help mothers engage in paediatric weight-loss efforts. It may be equally important to incorporate successful stories as part of interventions to begin changing the historical perspective that chronic diseases are hereditary, rather than preventive. Such interventions could possibly occur in community settings such as faith-based settings, schools and community organizations where families have trust and can easily participate.

The current study added a unique perspective from a US–Mexico border community on the issue of paediatric weight management among Latinos. Qualitative methods were used to further explore the potential barriers tied to weight loss in this population. Nevertheless, there were several limitations. Generalizability to other Latino communities is limited as mothers were of urban US–Mexican border communities in San Diego, California. Mothers were not asked to rate their child's body type or weight; therefore we cannot make any judgements about their children's weight status. The study was limited to maternal views. Fathers' opinions should be considered as well as how to increase their participation, particularly in weight-control programmes⁽³⁰⁾. Additionally, we did not assess parent acculturation; in retrospect, it would have been important to capture when considering parental cultural beliefs. Lastly, as in other Latino studies, social desirability may have played a role in the responses we received given that mothers have been exposed to many childhood obesity campaigns in San Diego and the nation⁽³¹⁾. Despite these limitations, our study contributes to a better understanding of the challenges involved in healthful eating and physical activity, and underlying cultural beliefs around obesity management.

Conclusion

Our findings support the idea that cultural beliefs play a role in how mothers perceive children's weight status and health. These beliefs combined with the daily demands and limited resources make healthy living challenging for this population. To improve obesity treatment and weight-control efforts in Latino families, researchers should be sensitive to these cultural beliefs and at the same time use these values (e.g. familism) to create more meaningful interventions that may result in a more positive and

sustainable impact. Increasing awareness of Latino cultural beliefs and daily circumstance could help us address obesity more directly and thereby overcome some of the underlying barriers that might exist when involving the Latino community in obesity treatment and prevention.

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References

1. National Center for Health Statistics (2013) Health, United States, 2012: With Special Feature on Emergency Care. <http://www.cdc.gov/nchs/data/abus/abus12.pdf#063> (accessed May 2016).
2. Barquera S, Campos I & Rivera JA (2013) Mexico attempts to tackle obesity: the process, results, push backs and future challenges. *Obes Rev* **14**, 69–78.
3. Babey SH, Wolstein J, Diamant AL *et al.* (2012) Overweight and Obesity among Children by California Cities – 2010. <http://healthpolicy.ucla.edu/publications/Documents/PDF/children2010fs-jun2012.PDF> (accessed November 2016).
4. Diaz-Apodaca BA, Ebrahim S, McCormack V *et al.* (2010) Prevalence of type 2 diabetes and impaired fasting glucose: cross-sectional study of multiethnic adult population at the United States–Mexico border. *Rev Panam Salud Publica* **28**, 174–81.

5. Ogden CL, Carroll MD, Kit BK *et al.* (2012) Prevalence of obesity and trends in body mass index among US children and adolescents, 1999–2010. *JAMA* **307**, 483–490.
6. US Census Bureau (2015) 2014 National Projections. <http://www.census.gov/population/projections/data/national/2014.html> (accessed May 2016).
7. Birch LL & Ventura AK (2009) Preventing childhood obesity: what works? *Int J Obes (Lond)* **33**, Suppl. 1, S74–S81.
8. Brown R & Ogden J (2004) Children's eating attitudes and behaviour: a study of the modelling and control theories of parental influence. *Health Educ Res* **19**, 261–271.
9. Tibbs T, Haire-Joshu D, Schechtman KB *et al.* (2001) The relationship between parental modeling, eating patterns, and dietary intake among African-American parents. *J Am Diet Assoc* **101**, 535–541.
10. Fisher JO, Mitchell DC, Smiciklas-Wright H *et al.* (2002) Parental influences on young girls' fruit and vegetable, micronutrient, and fat intakes. *J Am Diet Assoc* **102**, 58–64.
11. Sallis JF, Prochaska JJ & Taylor WC (2000) A review of correlates of physical activity of children and adolescents. *Med Sci Sports Exerc* **32**, 963–975.
12. Epstein LH, Paluch RA, Roemmich JN *et al.* (2007) Family-based obesity treatment, then and now: twenty-five years of pediatric obesity treatment. *Health Psychol* **26**, 381–391.
13. Sung-Chan P, Sung YW, Zhao X *et al.* (2013) Family-based models for childhood-obesity intervention: a systematic review of randomized controlled trials. *Obes Rev* **14**, 265–278.
14. Fuller B & García Coll C (2010) Learning from Latinos: contexts, families, and child development in motion. *Dev Psychol* **46**, 559–565.
15. Hughes SO, Anderson CB, Power TG *et al.* (2006) Measuring feeding in low-income African-American and Hispanic parents. *Appetite* **46**, 215–223.
16. Burciaga JA (1993) *Drink Cultura: Chicanismo*. Santa Barbara, CA: Joshua Odell Editions, Capra Press.
17. Marin G & VanOss Marin B (1991) *Research with Latino Populations*. Newbury Park, CA: SAGE Publications, Inc.
18. Hatcher E & Whittemore R (2007) Hispanic adults' beliefs about type 2 diabetes: clinical implications. *J Am Acad Nurse Pract* **19**, 536–545.
19. Juckett G (2013) Caring for Latino patients. *Am Fam Physician* **87**, 48–54.
20. Agne AA, Daubert R, Munoz ML *et al.* (2012) The cultural context of obesity: exploring perceptions of obesity and weight loss among Latina immigrants. *J Immigr Minor Health* **14**, 1063–1070.
21. Martinez SM, Blanco E, Rhee K *et al.* (2014) Latina mothers' attitudes and behaviors around feeding their children: the impact of the cultural maternal role. *J Acad Nutr Diet* **14**, 230–237.
22. Corbin J & Strauss A (1990) Grounded theory research – procedures, canons and evaluate criteria. *Z Soziol* **19**, 418–427.
23. Contento IR, Basch C & Zybert P (2003) Body image, weight, and food choices of Latina women and their young children. *J Nutr Educ Behav* **35**, 236–248.
24. Lindsay AC, Sussner KM, Greaney ML *et al.* (2011) Latina mothers' beliefs and practices related to weight status, feeding, and the development of child overweight. *Public Health Nurs* **28**, 107–118.
25. National Council of La Raza (2011) Comer bien: the challenges of nourishing Latino children and families. <http://publications.nclr.org/handle/123456789/1135> (accessed November 2016).
26. Smith TM, Duntun GF, Pinard CA *et al.* (2016) Factors influencing food preparation behaviours: findings from focus groups with Mexican-American mothers in southern California. *Public Health Nutr* **19**, 841–850.
27. Tschann JM, Martinez SM, Penilla C *et al.* (2015) Parental feeding practices and child weight status in Mexican American families: a longitudinal analysis. *Int J Behav Nutr Phys Act* **12**, 66.
28. Abraido-Lanza AF, Viladrich A, Florez KR *et al.* (2007) Commentary: Fatalismo reconsidered: a cautionary note for health-related research and practice with Latino populations. *Ethn Dis* **17**, 153–158.
29. de los Monteros KE & Gallo LC (2013) Fatalism and cardiometabolic dysfunction in Mexican-American women. *Int J Behav* **20**, 487–494.
30. Freeman E, Fletcher R, Collins CE *et al.* (2012) Preventing and treating childhood obesity: time to target fathers. *Int J Obes (Lond)* **36**, 12–15.
31. Hopwood CJ, Flato CG, Ambwani S *et al.* (2009) A comparison of Latino and Anglo socially desirable responding. *J Clin Psychol* **65**, 769–780.