



# Maternal Perceptions of Child Weight in Rural Mexico:

## An Exploratory Project to Inform Community-Based Obesity Interventions for Children and Mothers

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### Introduction

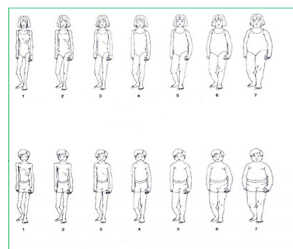
- Endearingly referred to as *amas de la casa* (housewives), Mexican women are the primary caregivers of the family unit, managing food preparation and diet of the whole family.<sup>1</sup>
- In general, Mexicans have a cultural view that “**chubby children are healthy children**.”<sup>2</sup>
  - Mexican mothers living in both California and Mexico frequently underestimated their children's weights.
  - Mexican mothers typically wanted their children to be bigger than they were.
  - Mexican mothers believed larger figures were ideal because they looked healthier.<sup>3</sup>
- Preference for heavier children is likely related to still **significant problems of undernutrition and stunting in Mexico**.<sup>4</sup>
- Lack of nutritional resources** may contribute- 75% of Mexican families report household food insecurities<sup>5</sup>.
- Recent studies of Mexican school-aged children report the **prevalence of obesity and overweight at over 30%**<sup>6</sup>
- Childhood obesity interventions are necessary** because of the link between obesity and cardiovascular health risk factors.
  - Overweight and obese Mexican school children have significantly **higher metabolic syndrome risk factors** than normal children, including hypertension, insulin resistance indexes, and triglyceride levels.<sup>7</sup>
  - Childhood obesity substantially **increases the risk of adulthood obesity**: 6-year-old obese child has a 50% chance of becoming an obese adult.

### Objective

- Evaluate mothers' perceptions of their children's weights and compare this to children's age-corrected BMI as an indicator of obesity
- Rationale:** An obesity intervention must address beliefs and attitudes of the individuals who are targeted for behavior change – in this case, the parents of at-risk children.
- An effective evaluation of maternal perceptions and preferences of weight could **direct development of a future obesity intervention**.

### Methods

- A sample of 174 male and female children was recruited to participate from 11 communities near San Miguel de Allende.
  - Inclusion criteria: 1) native of Guanajuato, Mexico
  - 2) elementary school-age children (age 5-11), and c) a mother accompanied the child and agreed to participate in the survey and to consent to the child's participation.
- Height (cm) and weight (kg) were collected and used to calculate BMI
  - Underweight = BMI-for-age percentile <5%**
  - Overweight = BMI-for-age percentile ≥ 85%**
- Mothers were presented with a pictorial scale developed by Collins<sup>8</sup> and asked:
  - Which image looks the most like the way your child looks?**
  - Which image looks the most like the way you want your child to look?**



- BMI z-score was calculated for each child based on CDC growth chart mean and standard deviation BMI for age information. The Collins scale choices were converted into z-scores where a rating of 4 became a z-score of 0, with z increasing by +1 for every rating above 4 and decreasing by 1 for every rating below 4.
- Paired t-tests were performed to evaluate whether BMI z-score differed significantly from maternal perception z-score or from maternal preference z-score, as well as whether maternal perception z-score difference significantly from maternal preference z-score.
- Study approved by UNC School of Medicine IRB.



### Results

Table 1: Demographics of the Sample (n=174)

Age	Male	Female	Total
4	4	0	4
6	7	10	17
7	16	19	35
8	15	18	33
9	14	20	34
10	12	16	28
11	9	14	23

Table 2: Weight Status Distribution

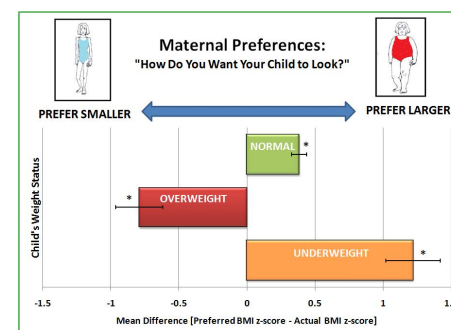
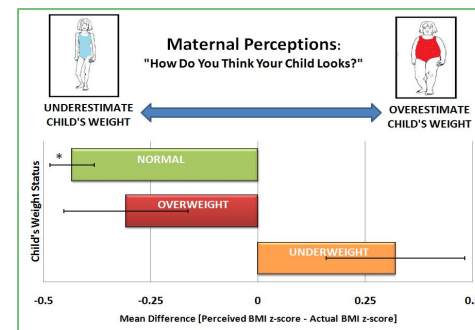
Weight Status	Male	Female	Total
Normal	64	80	144
Overweight	9	11	20
Underweight	4	6	10

#### Maternal Perceptions

- Mothers of those children classified as normal weight underestimated their children's weights by 0.433 standard deviations ( $p<0.001$ ).
- No significant difference between the way mothers perceived their overweight or underweight children and their actual weights.

#### Maternal Preferences

- Mothers of overweight children preferred their children to be 0.790 standard deviations lower in weight than the way they perceived them ( $p<0.05$ ).
- Mothers of underweight children preferred their children to be 1.222 standard deviations greater in weight than the way they perceived them ( $p<0.02$ ).
- Mothers of normal weight children preferred their children to be 0.384 standard deviations greater in weight than the way they perceived them ( $p=0.001$ ).



### Conclusions

- Mothers of **normal weight children underestimate their children's weights and prefer them to be heavier**.
- Mothers of **underweight and overweight children are more likely to appropriately estimate their children's weights, thus recognizing their children's weight problems**.
- Furthermore, these mothers recognize the change that needs to be made and **align their preferences with a change towards a healthy weight**.
- Possible that the **general preference is for heavier children**, as a compensation for problems of malnutrition and lack of food, but **when a child's weight becomes unhealthy the mothers become more aware of weight status**
- As childhood obesity and adulthood health problems related to obesity become more prevalent in Mexico, **maternal awareness of obesity is increasing and preferences are shifting away from having overweight children**.
- An **obesity intervention** should focus on **educating mothers about what a healthy weight is and how to maintain it**.
- Limitations:** Study was a convenience sample. Low numbers of overweight and underweight children.



#### References

- Marquez, Celina. *An Introduction to Mexico and the Role of Women*. West Virginia University Extension Service, WP 513.
  - Brewe, A. "Sociocultural aspects of obesity in young Mexican schoolchildren." *American Journal of Human Biology* 15(3): 448-460, 2003.
  - Ross, L.C., Harley K.G., Guendelman, S. et al. "Maternal Perception of Child Weight Among Mexicans in California and Mexico." *Maternal and Child Health Journal*, 2009.
  - Fernald, L. C., & Neufeld, L. M. "Overweight with concurrent stunting in very young children from rural Mexico: Prevalence and associated factors." *European Journal of Clinical Nutrition* 61(5): 623-632, 2007.
  - Ross, L., Harley K., Fernald L.C., Guendelman S., Mejia F., Neufeld L.M., et al. "Dietary associations of household food insecurity among children of Mexican descent: results of a transitional study." *Journal of the American Dietetic Association*, in press, 2009.
  - Shamah-Levy T., Mendez-Humanan I., Cuevas-Nasu L., Morales-Ruan M.C., Mundo-Rosas V. "Overweight and Obesity in Mexican School Children". *FASEB J* 23: 342.2
  - Perichart-Perera O., Balas-Nakash M., Schiffman-Seelichnik E., Barabato-Dostal A., Vadillo-Ortega F. "Obesity Increases Metabolic Syndrome Risk Factors in School-Aged Children from an Urban School in Mexico City." *J Am Diet Assoc*. 107:81-91, 2007
  - Collins, M. "Body figure perceptions and preferences among preadolescent children." *International Journal of Eating Disorders* 10: 199-208, 1991.
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