Comparison of dietary patterns in the Mexican and Mexican-American populations

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Introduction

Studies of diet and health are increasingly focused on dietary patterns rather than single foods or nutrients; dietary patterns reflect whole foods and combinations of intake. The concept behind dietary pattern analysis is that the examination of the totality of dietary patterns provides a more accurate description of actual dietary exposure.

Objective

In an effort to describe the dietary exposures among Mexican and Mexican-American women, we have undertaken a dietary patterns analysis using data from the United States National Health and Nutrition Examination Survey (NHANES) 1999-2004, which will be complementary to that conducted using data from the 1999 Mexican National Nutrition Survey (NNS). After determining whether or not similar dietary patterns exist for women of Mexican origin living on either side of the border, we will look for association between patterns and chronic disease risk factors such as BMI, blood pressure and lipid levels.

Methods

In both NNS and NHANES, dietary intake information was collected using standardized 24-hour dietary recall methodology. The NNS database contains complete data for 2599 women, aged 12-49 years, while NHANES 1999-2004 contains data for 2112 Mexican-American women in this age range. The same methods to determine dietary patterns were applied to both surveys. For the present analyses, data from a single 24-hour recall were used, even in cases where multiple recalls were obtained. Energy and nutrient contents of the foods were calculated using comprehensive food composition databases specific to each survey. In NNS there were 1051 food items and in NHANES there were 6974 items. All food items were categorized into 21 food groupings: maize-based foods, wheat-based foods, rice and other starches, ready-to-eat cereals, legumes, fruits and vegetables, red meats, poultry, fish and seafood, processed meats, dairy and eggs, low-fat dairy, oily seeds and nuts, vegetable oils, saturated fats, sweets, snacks and sweet breads, sodas and fruit juices, alcohol, water and coffee, and industrialized foods. Two analytic strategies are being used to identify dietary patterns, namely exploratory factor analysis using maximum likelihood principal components with orthogonal rotations and K-means cluster analysis. Results of the two approaches will be contrasted and differences noted. Each dietary pattern identified yields a score determined by the factor loadings. These scores, which are roughly independent by construction, will then be entered into prediction equations for each of the chronic disease risk factors.

Results

Mean BMI did not differ between the Mexican women in the NNS and Mexican-American women in NHANES, 26.4 ± 7.5 vs 26.4 ± 6.5 kg/m^2, respectively. Reported total energy intake was lower among Mexican women, 1535 ± 647 vs 1959 ± 846 kcal/d (p<0.001), respectively, as was total fat intake, 53.7 ± 33.9 vs 71.6 ± 38.9 g/d (p<0.001). Percent of calories from fat was also lower, though not dramatically, between the groups, $30.3 \pm 11.6\%$

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among Mexican and 32.2 ± 8.6% among Mexican-American women (p<0.001). Every nutrient, with the exception of retinol, had significantly lower reported levels among the Mexican women. These results are preliminary.

Conclusions

These data support the need for a dietary analysis that goes beyond comparison of absolute nutrient levels, particularly when comparing between surveys. The variation in methodology combined with the inherent difficulties of dietary data collection make patterns analysis attractive. Dietary patterns analysis will allow cross-cultural comparison of dietary exposures as well as an assessment of the association of any discernible patterns in both Mexican and Mexican-American women with known chronic disease risk factors.