



CWHS

# Data Points

RESULTS FROM THE 2008 CALIFORNIA WOMEN'S HEALTH SURVEY

Nearly one quarter of all California women are obese, and almost 30 percent are overweight.<sup>1</sup> Certain lifestyle habits and specific food consumption behaviors have been identified in the literature as associated with the likelihood of achieving and maintaining healthy weight. Conversely, not having these habits and consumption patterns raises the risk of obesity and weight gain.<sup>2-5</sup>

The *Network for a Healthy California (Network)* is a nutrition education program that targets low-income Californians, primarily women and their school-age children, who are participants in the Supplemental Nutrition Assistance Program (SNAP).<sup>6</sup> The *Network's* educational goals are to increase fruit and vegetable consumption, increase physical activity, reduce food insecurity, and reduce chronic disease through obesity prevention.

This analysis was conducted using records from the 3,721 women who were not pregnant and were at least one year postpartum who reported valid body weights on the 2008 California Women's Health Survey (CWHS). Core questions in the CWHS asked women to self-report height and weight, which were used to calculate their body mass index (BMI).<sup>7</sup>

Using nine questions related to protective behaviors and risk factors for obesity, respondents were asked about the:

- Weekly minutes of moderate to vigorous physical activity (calculated from two core questions)

- Hours of TV watched on a typical weekday
- Average daily servings of fruit and vegetables
- In the past month:
  - Number of times respondents weighed themselves
  - Number of days on which a respondent kept a "food diary"
  - Number of times respondents consumed:
    - ◊ Breakfast
    - ◊ Food from a fast-food restaurant
    - ◊ High-fiber cereal
    - ◊ Soda or other sweet beverage.<sup>8</sup>

Respondents were also asked the U.S. Department of Agriculture's standardized six-item validated short form of the food security scale for measuring food insecurity.<sup>9</sup> Based on their answers, women were classified into three groups: food secure, food insecure without hunger, and food insecure with hunger.<sup>10</sup> Women were asked about their present body weight goal ("lose weight," "keep off weight you have lost," "stay the same weight," "gain weight," or "not doing anything to control weight in any way"). They were also asked sociodemographic questions to classify their household income by ratio to the federal poverty level (FPL) and to identify their participation in SNAP.

The relationship between the nine lifestyle and food consumption behaviors and obesity was initially examined by stepwise regression to identify major variables contributing to differences in BMI. Only the variables that contributed significantly in the presence of the other variables were

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**Public Health Message:**  
*Low-income women, particularly those most vulnerable to irregular access to adequate nutritious food, are more likely than other women to report behaviors that do not support weight loss or weight loss maintenance. Actionable messages for these audiences targeting specific healthy weight-related habits paired with initiatives to build healthy communities can be an effective public health strategy to fight obesity.*

**California Women and Risk Factor Behaviors for Obesity Prevention: Weight Goals, Poverty, and Food Stamp Participation, 2008**

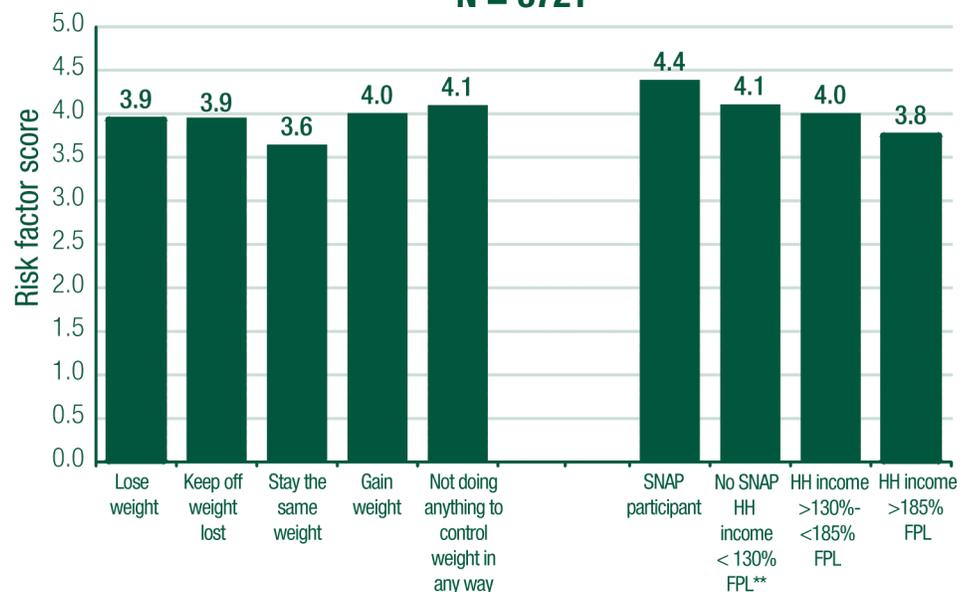
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retained in the model. Subsequently, eating high-fiber cereal and self-weighing were dropped out of the model because they did not statistically improve the prediction of BMI in linear regressions. The remaining variables were used to construct an additive seven-point risk factor score. One point was assigned for each of the following risk factors: less than 300 minutes of physical activity per week; keeping a food diary fewer than 20 days a month; watching two or more hours of TV on weekdays; eating fewer than five servings a day of fruit and vegetables; eating breakfast less than six times a week; eating fast food two or more times a week; and drinking soda/sweet beverages at least once a day. The relationship between this composite risk factor score, sociodemographic (poverty level, SNAP participation), and personal characteristics (weight goal, food security) was examined using bivariate statistics. Regression

analysis was subsequently performed to identify the relative effect of each of the seven risk factors on obesity. Responses were weighted in these analyses by age and race/ethnicity to reflect the 2000 California adult female population.

- Out of a possible seven obesity risk factors, the mean score for all women was 3.9. A higher risk factor score indicates fewer healthy habits.
- Overweight or obese women had significantly higher risk factor scores (4.0 and 4.2, respectively) than women at healthy weight (3.7;  $P < .001$  across the category and  $P < .05$  within the category). No statistical difference was found between the risk factor score of underweight women (3.9) and those of healthy weight or overweight women.

Figure 1  
**Risk Factor Score\* of Unhealthy Weight Behaviors Among California Women, 2008**  
 N = 3721



\* Maximum score = 7; Low score is desirable

\*\* FPL = federal poverty level

Note: HH – house hold; SNAP - Supplemental Nutrition Assistance Program

Source: California Women’s Health Survey, 2008

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- Women presently trying to maintain weight had a lower risk factor score (3.6) than women in any of the other present body weight goal categories (3.9-4.1;  $P < .001$ ). (See Figure 1)
- Food insecure women with hunger had the highest mean risk factor score, followed by those without hunger, then by food secure women (4.4, 4.2, and 3.8, respectively;  $P < .001$ ).
- Risk factor scores for low-income women were higher than those for higher-income women, whether low income was defined as  $< 130$  percent (4.2 vs. 3.8) or  $< 185$  percent FPL (4.1 vs. 3.8;  $P < .001$  for both).
- SNAP participants had the highest mean risk factor score (4.4), followed by non-SNAP participants in households within the eligible income range of  $< 130$  percent of the FPL (4.1), respondents from households with income 131 percent to 185 percent of the FPL (4.0), and households with income  $> 185$  percent of the FPL (3.8). Differences between the 131 percent to 185 percent FPL group and adjacent groups were not significant; but differences between all other pairings were significant ( $P < .05$ ).

Simultaneous linear regression estimated BMI as a function of the seven significant risk factors included in the composite risk score above. Holding these risk factors constant in the model, the regression coefficients indicated that on average, not having 300 minutes weekly of moderate or vigorous exercise added 1.3 BMI units; watching at least two hours of TV added 1.3 units; not eating breakfast added 1.1 units, not eating five or more fruits and vegetables per day added 1.0 unit; drinking sodas or other sweet beverages added 0.8 unit; and eating fast food added 0.7 units.

Those who monitored food intake averaged 2.5 BMI units higher, suggesting that this may be a behavior associated with high attention to weight control rather than a true risk factor for developing obesity.

A model that added body weight goal accounted for 23 percent of the variance ( $P < .0001$ ). After controlling for the above behavioral risk factors, women who reported trying to lose weight were an average 5.8 BMI units higher, and women who were trying to gain weight were 4.2 BMI units lower than those who were trying to stay the same weight. Regressions that substituted the composite risk factor score for the individual factors also showed a significant relationship between engaging in unhealthy weight behaviors and higher BMI ( $P < .0001$ ). This was true with just the composite score and also when personal characteristics such as body weight goal were included.

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- 1 Centers for Disease Control and Prevention (CDC). *Behavioral Risk Factor Surveillance System - Prevalence and Trends Data*. Atlanta, Georgia: U.S. Dept of Health and Human Services, Centers for Disease Control and Prevention; 2008. <http://apps.nccd.cdc.gov/brfss/sex.asp?cat=OB&yr=2008&qkey=4409&state=CA>. Accessed October 22, 2009.
- 2 *The National Weight Control Registry: NWCR Facts*. <http://www.nwcr.ws/Research/default.htm>. Accessed October 22, 2009.
- 3 Ritchie LD, Woodward-Lopez G, Gerstein D, Smith D, Crawford PB. Preventing obesity: what should we eat? *California Agriculture*. 2007; 61(3):112. <http://repositories.cdlib.org/anrcs/californiaagriculture/v61/n3/p112>. Accessed October 22, 2009.
- 4 National Heart Lung and Blood Institute, National Institutes of Health. *Predictors of Obesity, Weight Gain, Diet, and Physical Activity Workshop*. Bethesda, MD, August 4-5, 2004. <http://www.nhlbi.nih.gov/meetings/workshops/predictors/summary.htm>. Accessed October 22, 2009.
- 5 Hu FB, Li TY, Colditz GA, Willett WC, Manson JE. Television watching and other sedentary behaviors are related to risk of obesity and type 2 diabetes mellitus in women. *JAMA*. 2003; 289(14):1785-1791.
- 6 In 2009, the name of the federal Food Stamp Program was changed to the Supplemental Nutrition Assistance Program. The qualifying income level for SNAP is household income no higher than 130 percent of the Federal Poverty Level.
- 7 BMI definitions: healthy weight (18.5-24.9), overweight (25-29.9), obese (> 30).
- 8 Sweet beverages included “regular soda, fruit drinks, or other sweet beverages like Kool-Aid, lemonade, Hi-C, cranberry juice drinks, energy drinks and sports drinks,” but not diet drinks.
- 9 Food security is defined as “has access, at all times, to enough food for an active, healthy life” (Bickel, Nord et al, 2000).
- 10 Bickel G, Nord M, Price C, Hamilton W, Cook J. *Guide to Measuring Household Food Security*, Revised 2000. Alexandria, VA: US Dept of Agriculture, Food and Nutrition Service; March 2000.

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