Predictors of trying to lose weight among overweight and obese Mexican-Americans: a signal detection analysis

Andrea Bersamin[1],*, Krista D Hanni[2] and Marilyn A Winkleby[1]

[1]Stanford Prevention Research Center, Stanford University School of Medicine, Hoover Pavilion, Room 229, 211 Quarry Road, Stanford, CA 94305, USA: [2]Monterey County Health Department, Salinas, CA, USA

Abstract

Objective: Signal detection analysis, a form of recursive partitioning, was used to identify combinations of sociodemographic and acculturation factors that predict trying to lose weight in a community-based sample of 957 overweight and obese Mexican-American adults (ages 18–69 years).

Design: Data were pooled from the 2004 and 2006 Behavioral Risk Factor Surveillance System conducted in a low-income, semi-rural community in California.

Results: Overall, 59 % of the population reported trying to lose weight. The proportion of adults who were trying to lose weight was highly variable across the seven mutually exclusive groups identified by signal detection (range 30–79 %). Significant predictors of trying to lose weight included BMI, gender, age and income. Women who were very overweight (BMI $> 28 \cdot 5 \, \mathrm{kg/m^2}$) were most likely to be trying to lose weight (79 %), followed by very overweight higher-income men and moderately overweight (BMI = $25 \cdot 0$–$28 \cdot 5 \, \mathrm{kg/m^2}$) higher-income women (72 % and 70 %, respectively). Moderately overweight men, aged 28–69 years, were the least likely to be trying to lose weight (30 %), followed by moderately overweight lower-income women (47 %) and very overweight lower-income men (49 %). The latter group is of particular concern since they have characteristics associated with medical complications of obesity (low education and poor access to medical care).

Conclusions: Our findings highlight opportunities and challenges for public health professionals working with overweight Mexican-American adults – particularly lower-income adults who were born in Mexico – who are not trying to lose weight and are therefore at high risk for obesity-related co-morbidities.

The high prevalence of obesity among Mexican-Americans is a major public health concern. Recent estimates indicate that more than 75 % of Mexican-American adults in the USA are overweight or obese – less than 25 % are at a healthy, normal weight[1]. These statistics may be a gauge of poor access to and/or lack of effective weight-loss strategies and are a stark reminder of how much more progress is needed to reach the Healthy People 2010 target goal of increasing the proportion of adults at a healthy weight to 60 %[2].

Despite the well-recognised benefits of intentional weight loss among overweight and obese individuals[3–7], less than 60 % of overweight and obese Latinos are currently trying to lose weight[8]; this may be an indicator of a low level of readiness for weight loss and therefore has important implications for the success of weight-loss interventions. While previous studies have examined sociodemographic and acculturative correlates of obesity[9,10] and individual responses to weight-loss interventions[11], few studies[8,12]

have examined sociodemographic and acculturative factors in relation to trying to lose weight. To our knowledge none of these studies have examined interactions between these factors or focused on Latino populations, the majority of whom are Mexican-American. This knowledge is of particular importance given the rapidly growing numbers of Mexican-Americans in the USA[13], and their high levels of obesity across a number of important subgroups[14,15].

The current study extends previous research by using signal detection methodology, a form of recursive partitioning, to identify constellations of sociodemographic and acculturation factors that predict trying to lose weight in a community-based sample of overweight or obese Mexican-American adults. Results of this study will characterise those who are more or less likely to engage in weight-loss behaviours and will likely serve as an important first step in the development of tailored obesity prevention and treatment strategies.

Corresponding author: Email abersamin@stanford.edu

Research methods and procedures

Data were pooled from the 2004 and 2006 Behavioral Risk Factor Surveillance System (BRFSS) conducted in Salinas, an agricultural community in Monterey County, California, that is one of the Steps to a Healthier US communities[16,17]. Data from 2005 were not included since information on physical activity and fruit and vegetable consumption were collected on even-numbered years only. The BRFSS is a cross-sectional health survey developed by the Centers for Disease Control and Prevention (CDC) in collaboration with states to monitor the prevalence of risk behaviours and access to health care among the civilian adult population aged 18 years and older[18]. The BRFSS uses a disproportionate stratified sampling methodology to ensure the inclusion of a representative sample of respondents who are interviewed by specially trained survey workers using a computer-assisted telephone interview. In addition to the CDC core questions, Monterey county-specific questions relating to acculturation were asked. The completion rates for the 2004 and 2006 surveys were 58·6% and 53·1%, respectively. The study was approved by the Stanford University Institutional Review Board.

Criteria for inclusion in the present analysis included: (1) self-identification as Mexican-American; (2) age 18 to 69 years old; (3) overweight or obese (BMI ≥ 25 kg/m^2); and (4) not currently pregnant. The final sample was 510 women and 447 men, for a total of 957 adults, which represents 29% of the total community sample.

Data analysis

Signal detection methodology[19,20] was used to identify acculturation and other sociodemographic factors associated with trying to lose weight, which was used as the binary outcome variable and was determined in response to the question 'Are you now trying to lose weight?' (yes/no). The signal detection methodology sequentially partitioned the data to identify mutually exclusive groups based on the probability of the outcome variable. Predictor variables were entered and the algorithm identified cut points and variables that resulted in the greatest discrimination with regard to the outcome variable based on equally weighting sensitivity and specificity. After identifying and splitting on the optimal predictor variable, the signal detection software searched for the next most important predictor variable within each subgroup. This procedure was repeated separately in each subgroup with all predictor variables until: (1) there were not enough subjects in a subgroup to proceed ($n < 25$) and/or (2) no further significant discriminating variables were found ($P < 0.001$). An advantage of signal detection is that variables that are collinear can be entered into the model without bias, unlike multiple or logistic regression models[21].

Based on a review of the literature of socio-demographic correlates of obesity among Latinos[22–25], eleven predictor variables that represent indicators of acculturation, other sociodemographic factors and BMI were selected for inclusion in the model. The eleven predictor variables were defined as follows, with ample precision in the ordinal and scale variables.

Acculturation-related variables

1. Generation status: born in Mexico; first generation born in the USA; second generation born in the US.
2. Primary language spoken at home: primarily Spanish; both Spanish and English equally; primarily English.
3. Years lived in the US.

Other sociodemographic variables and BMI

4. Gender.
5. Age, in years.
6. Education, highest grade or year completed: less than high school graduation; high school graduate; at least some college.
7. Annual household income: <$10 000; $10 000 to <$15 000; $15 000 to <$20 000; $20 000 to <$25 000; $25 000 to <$30 000; $30 000 to <$35 000; $35 000 to <$50 000; $50 000 to <$75 000; $75 000 to $100 000; >$100 000.
8. Employment status: not in the labour force; employed in a white-collar occupation; employed in a blue-collar occupation.
9. Marital status: single or married.
10. Number of children in household.
11. BMI (kg/m^2), calculated from self-reported weight and height and used as a continuous variable rounded to the tenth.

After the signal detection model was run, the following additional variables, which represent health, health perception, health-care access and lifestyle factors, were used to characterise the seven subgroups identified by the model.

Health variables

- Hypertension, in response to 'Have you ever been told by a health professional that you had high blood pressure?' (yes/no).
- Diabetes status, in response to 'Have you ever been told by a health professional that you had diabetes' and 'Are you now taking insulin or diabetes pills?' (yes/no).
- Asthma status, in response to 'Have you ever had' and 'Do you still have asthma?' (yes/no).

Health perception

- Self-reported health, in response to 'Would you say that in general your health is excellent, very good, good, fair or poor?'

- Weight perception, in response to 'Do you now consider yourself to be overweight, underweight, or about average?'

Health-care access/information

- Health insurance coverage (yes/no).
- Doctor visit within past year (yes/no).
- Inability to see a doctor because of cost in the last year, in response to 'Was there a time in the past 12 months when you needed to see a doctor but couldn't because of cost?' (yes/no).
- Ever advised by a doctor to: (1) eat fewer high-fat or high-cholesterol foods; (2) eat more fruits and vegetables; (3) be more physically active (yes/no for each).

Lifestyle factors
Physical activity

- Participate in physical activity other than job? (yes/no).
- Met physical activity recommendations: ≥1 h of vigorous physical activity last week or ≥2·5 h of moderate physical activity last week.
- Used physical activity to lose weight? (yes/no).

Diet

- Met fruit and vegetable consumption recommendations: ≥2 fruit servings and ≥3 vegetable servings yesterday.
- Ate fast food yesterday? (yes/no).
- Drank ≥1 soda yesterday? (yes/no).
- Ate fewer calories to lose weight? (yes or no).

Results

Women comprised 53·3 % of this sample of overweight or obese Mexican-American adults (Table 1). The majority of respondents were born in Mexico (69·3 %), reported speaking mostly Spanish at home (64·3 %) and had lived in the USA for more than 10 years (91·9 %). Educational attainment was low, with 51·1 % of the sample completing less than 12 years of education. Over one-half reported an annual household income of <$25 000. The average BMI for the sample was 30·3 (SD 4·9) kg/m^2.

The results of the signal detection analysis are shown in Fig. 1. Overall, 59 % of the sample reported trying to lose weight. This percentage was highly variable across the seven final groups identified by the analysis, ranging from 30 % to 79 %.

BMI was identified as the optimal predictor of trying to lose weight, and was used to divide the full sample into two groups: those who were moderately overweight (BMI 25·0–28·4 kg/m^2) and those who were very overweight or obese (BMI ≥ 28·5 kg/m^2), with this cut point identified by the algorithm based on equally weighting sensitivity and specificity. Those who were very overweight or obese were significantly more likely than those who were moderately overweight to report trying to lose weight (69 % v. 46 %), χ^2 (1, 957) = 52·1, $P < 0·0001$. The weight difference between these two groups translates into a large difference – those who were moderately overweight were approximately 4·4–5·3 kg overweight (1·7 BMI units >24·9 kg/m^2), whereas those who were very overweight or obese were approximately 21·3–25·4 kg overweight (8·2 BMI units >24·9 kg/m^2)[26].

Among those who were moderately overweight or very overweight or obese, the next optimal predictor to divide the sample was gender. Moderately overweight and very overweight or obese women were significantly more likely to report trying to lose weight than their respective male counterparts (χ^2 (1, 427) = 28·2, $P < 0·0001$ and χ^2 (1, 530) = 27·2, $P < 0·0001$, respectively). Among

Table 1 Sociodemographic characteristics of the study population: overweight and obese Mexican-American women and men

|	Women		Men		Total	
	Mean	SD	Mean	SD	Mean	SD
Sample size	510		447		957	
Age (years)	39·7	11·3	39·7	11·8	39·7	11·5
Generation status (%)						
Born in Mexico	68·8		70·0		69·3	
1st generation US-born	10·2		11·9		10·8	
2nd generation	20·6		17·7		19·3	
Language (%)						
English	27·3		25·6		26·5	
Bilingual	9·2		9·2		9·2	
Spanish	63·5		65·2		64·3	
Years in the USA (%)						
≥10 years	86·8		82·7		91·4	
≥20 years	62·7		59·3		65·8	
Education (%)						
<12 years	49·6		52·8		51·1	
12 years	26·1		23·3		24·8	
>12 years	24·3		23·9		24·1	
Annual household income <$25 000 (%)	57·4		44·2		51·2	
Not in labour force (%)	41·2		18·1		36·3	
Married (%)	53·8		68·8		60·8	
BMI (kg/m^2)	30·8	5·6	29·6	4·0	30·3	4·9
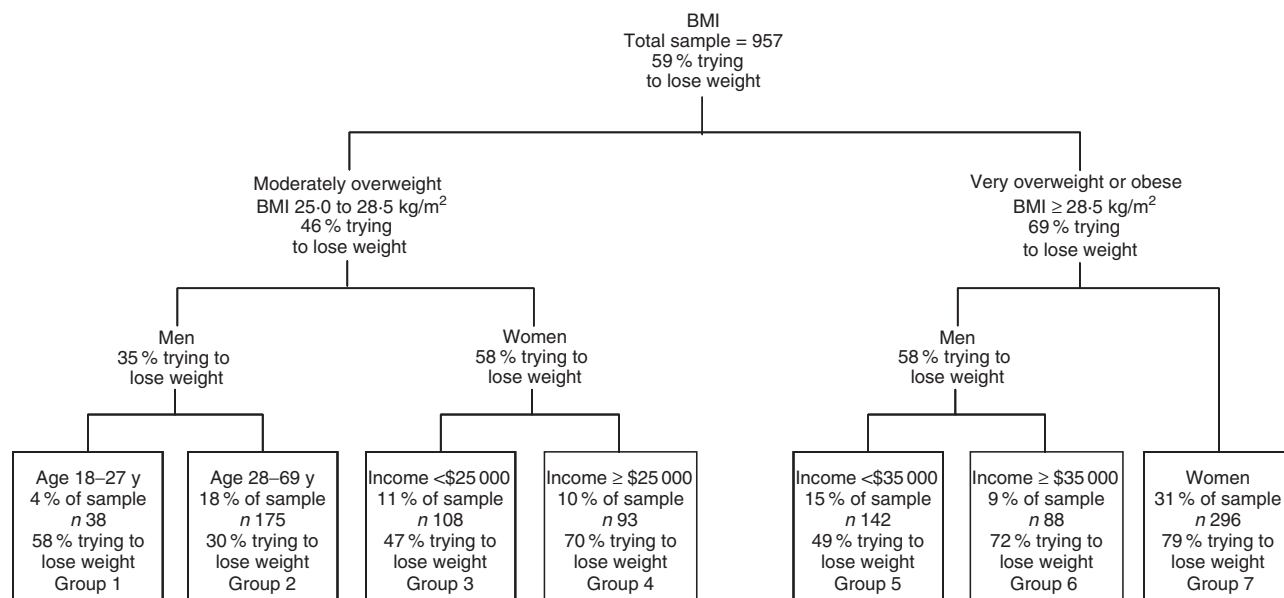
Fig. 1 Signal detection analysis on trying to lose weight for overweight or obese Mexican-American women and men, ages 18–69 years, Behavioral Risk Factor Surveillance System (BRFSS) 2004 and 2006. Outcome variable: Are you now trying to lose weight (yes or no). Independent variables: Generation status, primary language spoken at home, years in the US, gender, age, education, annual household income, employment status, marital status, number of children in household and body mass index (BMI)

moderately overweight men, the next optimal predictor to divide this group was age: younger men were nearly twice as likely to be trying to lose weight as middle- and older-aged men (58% $v.$ 30%, respectively, groups 1 and 2), χ^2 (1, 213) = 10·4, $P = 0·001$. Among very overweight or obese men, the next optimal predictor to divide this group was income. Men with an annual income of ≥$35 000 were more likely to be trying to lose weight than those with a lower annual income (72% $v.$ 49%, respectively, groups 6 and 5), χ^2 (1, 234) = 11·8, $P < 0·001$.

Among moderately overweight women, the next optimal predictor to divide this group was income – those with an annual income of ≥$25 000 were more likely to be trying to lose weight than those with a lower annual income (70% $v.$ 47%, respectively, groups 4 and 3), χ^2 (1, 214) = 10·5, $P = 0·001$. Among very overweight or obese women, no additional predictors were found which discriminated against those who were more or less likely to report trying to lose weight. Compared with all groups, very overweight or obese women were most likely to be trying to lose weight (79%, group 7).

When separate signal detection models were run for women and for men, the same predictors were identified (except gender) and there were no other meaningful differences.

The signal detection analysis thus identified three groups that were substantially more likely (groups 4, 6 and 7) or less likely (groups 2, 3 and 5) to report trying to lose weight compared with the average sample-wide proportion of 59%. These six groups are compared on sociodemographic characteristics, health status indicators,

health-care access and lifestyle factors (Table 2). Notably, compared with lower-income groups, higher-income groups (groups 4 and 6), who were among the most likely to report trying to lose weight, were more likely to be second-generation US-born Mexican-Americans, have had at least some college education and have health care. In addition, these two groups were more likely to participate in leisure-time physical activity, have met the physical activity recommendations and have consumed the recommended servings of fruits and vegetables.

Subsequent analyses examined the relationship between weight perception and trying to lose weight. Among both overweight and obese women and men, those individuals who perceived themselves as overweight were much more likely to report trying to lose weight than those who perceived themselves as average weight (data not shown). Gender differences in weight perception were apparent, especially among the overweight respondents (Fig. 2). Overweight women were twice as likely to have an accurate weight perception compared with overweight men (59% $v.$ 31%, respectively), χ^2 (1, 562) = 45·3, $P < 0·0001$. The gender gap in weight perception was smaller among obese – 88% of women considered themselves as overweight compared with 72% of men (χ^2 (1, 393) = 14·7, $P = 0·0001$).

Discussion

To our knowledge, this is the first study to identify a constellation of sociodemographic characteristics

Table 2 Descriptive profiles of subgroups: overweight and obese Mexican-American women and men, ages 18–69 years

	Moderately overweight, BMI = 25·0–28·5 kg/m²				Very overweight or obese, BMI ≥ 28·5 kg/m²		
	Men aged 18–27 years, Group 1	Men aged 28–69 years, Group 2	Women income <$25 000, Group 3	Women income ≥$25 000, Group 4	Men income <$35 000, Group 5	Men income ≥$35 000, Group 6	Women, Group 7
Trying to lose weight, n (%)	38 (58)	175 (30)	108 (47)	93 (70)	142 (49)	88 (72)	296 (79)
Acculturation							
Generation status (%)*							
Born in Mexico	73·7	70·9	84·3	59·1	78·9	51·1	66·6
1st generation US-born	15·8	14·9	8·3	22·6	13·4	31·8	18·9
2nd generation	10·5	13·7	7·4	16·1	7·0	15·9	14·5
Language (%)*							
English	18·4	28·6	13·0	41·9	14·1	39·8	27·4
Bilingual	7·9	8·6	5·6	7·5	7·8	13·6	11·5
Spanish	73·7	62·9	81·5	50·5	77·5	45·5	61·2
Years in the USA (%)*							
≥10 years	60·5	96·5	73·8	91·4	89·3	97·7	83·8
Sociodemographic							
Age (%)*							
18–29 years	100·0	8·6	21·3	20·4	16·9	14·8	20·6
30–49 years	0·0	62·9	58·3	63·4	61·9	68·2	57·1
50–69 years	0·0	28·6	20·4	16·1	21·1	17·1	22·3
Education (%)*							
<12 years	42·1	53·1	66·7	31·2	69·7	29·6	49·3
12 years	31·6	21·1	25·0	25·8	21·1	27·3	26·4
>12 years	26·3	25·7	8·3	43·0	9·2	43·2	24·3
Annual household income <$25 000 (%)*	50·0	39·4	100·0	0·0	73·2	0·0	58·1
Usual occupation (%)							
Blue-collar worker	68·4	63·4	40·7	30·1	64·8	56·8	33·1
White-collar worker	26·3	34·9	29·6	48·4	30·3	40·9	42·9
Not in labour force	18·4	14·9	54·6	29·0	25·4	11·4	40·2
Married (%)	50·0	77·1	52·8	78·5	81·0	83·0	60·8
No. of children in household (%)*							
0–1 children	63·2	42·3	40·7	43·0	44·4	42·1	45·8
2–3 children	34·2	47·4	50·0	43·0	38·7	51·1	45·1
≥4 children	2·6	10·3	9·3	14·0	16·9	6·8	9·2
Health							
BMI (kg/m²), median*	26·8	26·7	26·7	26·6	30·8	30·8	32·4
Diabetes (%)	0·0	6·3	3·7	3·2	11·3	11·4	9·5
High blood pressure (%)	0·0	9·7	10·2	8·6	15·5	10·2	18·9
Asthma (%)	2·6	1·7	1·9	4·3	3·5	1·1	8·8
Perceived health							
General health (%)							
Excellent/very good	39·5	29·7	28·7	47·3	21·8	39·8	23·0
Good	36·8	42·3	44·4	32·3	33·1	38·6	30·1
Fair/poor	23·7	28·0	26·9	20·4	45·1	21·6	47·0

Table 2 *Continued*

	Moderately overweight, BMI = 25·0–28·5 kg/m²				Very overweight or obese, BMI ≥ 28·5 kg/m²		
	Men aged 18–27 years, Group 1	Men aged 28–69 years, Group 2	Women income <$25 000, Group 3	Women income ≥$25 000, Group 4	Men income <$35 000, Group 5	Men income ≥$35 000, Group 6	Women, Group 7
Trying to lose weight, *n* (%)	38 (58)	175 (30)	108 (47)	93 (70)	142 (49)	88 (72)	296 (79)
Weight perception (%)							
Underweight	7·9	2·9	4·6	3·2	2·8	1·1	1·4
About average	65·8	72·6	49·1	41·9	35·9	29·6	10·8
Overweight	26·3	24·6	46·3	53·8	60·6	69·3	87·5
Health care							
Have health care (%)	47·4	69·1	65·7	77·4	57·8	87·5	66·9
Visited doctor within past year (%)	65·8	64·6	79·6	89·3	64·1	84·1	83·8
Medical care cost prohibited (%)	21·1	17·1	25·9	16·1	24·7	9·1	31·1
Received medical advice to (%):							
Eat fewer high-fat or high-cholesterol foods	26·3	29·7	26·9	34·4	26·8	45·5	47·0
Eat more fruits and vegetables	34·2	40·6	47·2	47·3	39·4	51·1	58·1
Be more physically active	29·0	32·0	47·2	41·9	36·6	54·6	59·1
Lifestyle factors							
Physical activity							
Participate in physical activity other than job (%)	73·7	64·0	62·0	74·2	55·6	76·1	56·1
Met physical activity recommendation (%)	94·7	86·3	75·9	92·5	80·3	89·8	75·7
Used physical activity to lose weight (%)	86·4	77·4	68·6	81·5	63·8	77·8	62·2
Diet							
Ate ≥2 fruit servings and ≥3 vegetable servings yesterday (%)	13·2	10·9	9·3	16·1	7·0	21·6	8·8
Ate fast food yesterday (%)	23·7	23·4	14·8	11·8	21·1	28·4	17·2
Drank ≥1 soda yesterday (%)	73·7	65·1	47·2	47·3	60·6	62·5	50·3
Ate less energy to lose weight (%)	72·7	86·8	84·3	90·8	84·1	87·3	83·2

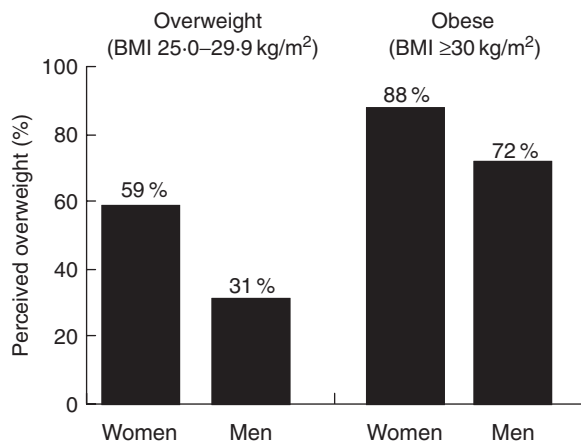*Variable included in signal detection model.

Fig. 2 Percentage of women and men who considered themselves overweight, by weight status

associated with trying to lose weight in a community-based sample of overweight and obese Mexican-American adults. Overall, 59% of the population reported trying to lose weight, which is consistent with an estimate among Hispanics in the 2000 national BRFSS[8]. Results, however, showed that the proportion of individuals who were trying to lose weight was highly variable across the seven mutually exclusive groups identified by signal detection (range 30–79%). The heterogeneous character of the population has important implications for public health professionals as they focus their efforts on designing and implementing weight-loss interventions tailored to Mexican-Americans.

Three groups with a relatively low prevalence of trying to lose weight (groups 2, 3 and 5), which may therefore be in danger of developing or exacerbating existing weight-related medical complications, were identified and characterised. Of particular concern was the low percentage (49%) of very overweight or obese men with a low income who reported trying to lose weight, despite being on average 22·3 kg overweight (7·2 BMI units >24·9 kg/m^2). This finding is not surprising since a clustering of factors was identified in these men that have previously been associated with an 'at-risk' profile. When compared with very overweight or obese men with a relatively high income (who were among the most likely to report trying to lose weight), these men were half as likely to have graduated from high school – low educational attainment and low income, two indicators of socio-economic status (SES) used in the present study, are consistently related to lower health literacy and self-efficacy[27–29], a higher burden of chronic disease risk factors[27,30–32] and higher mortality from chronic diseases[33]. This is likely to be compounded by potential language barriers. Barriers to medical care also likely contribute: more than 40% of these men were uninsured, which is higher than the national average for Mexican-Americans (27%)[34], and approximately two-thirds did

not receive medical advice relating to optimal diet and physical activity habits. These statistics may lend support to findings that ethnic minority groups, including Mexican-Americans, receive lower-quality health care[35,36] and highlight the importance of regular interactions with culturally sensitive primary-care providers who have a strong influence on weight-loss behaviours[23,37].

Moderately overweight women with a low annual household income had similar characteristics to very overweight or obese men with a low annual income. Both groups (3 and 5, respectively) would benefit from interventions that consider potential socio-economic barriers to health including their economic disadvantage, Spanish language preference and potential low health literacy. Several studies have developed interventions for Mexican-Americans based on an understanding of these factors with measurable success. For example, Elder et al. have shown that interventions using Promotoras, who deliver culturally appropriate and personalised weight-loss interventions, are more likely to be successful than those focusing on the delivery of print materials[38,39]. Health literacy in the study population may be low, which underscores the importance of access to culturally competent health professionals and the availability of tailored bilingual health materials[40,41].

Moderately overweight men aged 28–69 years (group 2), which includes the large majority of all moderately overweight men, were the least likely to be trying to lose weight (30%). It is possible that since this group includes a wide range of ages, a generalisable conclusion cannot be drawn about the implications of this finding. Interestingly, 72% of these men considered their weight as 'about average' – a higher percentage than any other group. There are at least two potential explanations for this. First, BMI may not be a valid measure of adiposity for some men in this group who are physically active and may have a relatively low body fat content[42]. Second, moderately overweight men may not have an accurate perception of their body weight. There is evidence that overweight and obese men are less likely to perceive themselves as such compared with overweight and obese women[43,44] – Paeratakul et al. found the gender difference to be particularly large among Hispanics[45]. A prospective analysis of data from the Framingham Heart Study estimated the 30-year risk of developing obesity as 1 in 4[46] – this suggests that more than a quarter of these men are likely to transition from overweight to obese by the time they reach middle or older age. In order to reduce the burden of medical complications that accompany increased age, primary prevention in this group is imperative.

Three groups with a relatively high proportion of trying to lose weight were also identified, which may relate, in part, to high motivation. Different intervention strategies are likely to be effective with these groups. Very overweight or obese women were the most likely to report trying to lose weight (group 7; 79%), followed by the two

higher-income groups (groups 4 and 6; 70 % and 72 %, respectively). Since these women and men are already trying to lose weight, barriers to successful weight loss should be identified. A considerable literature suggests that communities with a high prevalence of poverty, such as Salinas, California, may have fewer resources (and more barriers) to follow a healthy lifestyle than communities with a low prevalence of poverty[47–49]. Intervention strategies that focus on changing the environment to one conducive to making healthy lifestyle choices should therefore be developed to complement strategies developed to change individual behaviours[50]. Such changes, for example, can include city and public policy initiatives and allocation of resources to promote walking and bicycle paths[51], city parks[52] and affordable fruits and vegetables in small grocery stores[53]. Environmental interventions are particularly important given results from a national survey indicating that Mexican-Americans are twice as likely as whites to regain lost weight[54].

Given that this was an overweight and obese sample, we felt it was important to evaluate the weight-loss efforts of the 59 % who reported trying to lose weight. Although on average more than 75 % of respondents reported consuming less energy to lose weight, which is consistent with data from the National Health and Nutrition Examination Survey 2001–2002[55], the very high prevalence of overweight and obesity may be an indication of ineffective dieting strategies. A physician-driven education campaign to increase awareness about the energy reduction needed to promote weight loss may be helpful. For example, less than one-half of respondents received advice to limit intake of high-fat foods, which may aid weight-loss efforts. Furthermore, one-third of respondents who reported trying to lose weight did not use physical activity to lose weight, despite considerable evidence showing that increasing physical activity, in combination with energy reduction, is the most effective strategy for maintaining or losing weight.

Strengths and limitations

An important strength of this study is its use of a large community-based sample of overweight and obese Mexican-Americans. The modified BRFSS questionnaire included questions about generation status, primary language spoken and years lived in the USA that allowed important differences in the level of acculturation to be identified within the sample. To the authors' knowledge, this is the first study to investigate how these indicators of acculturation are related to trying to lose weight. An additional strength of the study is its use of a signal detection methodology. An important advantage of this method is that, unlike multiple or logistic regression, it is not affected by collinearity – a number of closely related variables can therefore be examined without threat to statistical power or possible bias. Furthermore,

the analysis results in subgroups which are similar with respect to both the outcome of interest and risk predictors, thus facilitating the development of tailored health interventions[21].

A potential limitation of the study includes the use of self-reported weight and height, the validity of which has been questioned by a number of studies[56–59]. Gillum and Sempos demonstrated that among overweight Mexican-Americans, weight status was underestimated by up to 20 %[57]. It is unknown how this possible underestimation of the obesity prevalence may have influenced the configuration of the higher- and lower-risk groups identified by the signal detection analysis.

An inherent limitation of the cross-sectional nature of the study is that a temporal relationship could not be established between weight-loss efforts and the prevalence of obesity. Furthermore, neither the duration of weight-loss efforts nor information about previous weight-loss efforts was known – both these variables may alter the study's interpretation.

Using individual constructs, such as generation status, primary language and years lived in the USA, as a proxy for acculturation may have limited utility and is unlikely to capture the multi-dimensional nature of acculturation[60,61]. Nevertheless, inclusion of additional variables such as income and health-care access serve to strengthen the proxy measures through contextualisation[62,63].

Conclusion

Results from the present exploratory study suggest that health messages communicating the importance of maintaining a healthy weight and/or weight-loss interventions may not be reaching specific groups of overweight and obese Mexican-Americans, who may subsequently experience obesity-related medical complications. Results also show that the relationship between indicators of SES, acculturation and trying to lose weight parallels the relationship between indicators of SES, acculturation and obesity. These findings highlight opportunities and challenges for public health professionals working with Mexican-American adults – particularly low-income adults who were born in Mexico – who are not trying to lose weight and are therefore at high risk for obesity-related co-morbidities.

Acknowledgements

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