Cancer-Related Health Behaviors and Screening Practices Among Latinos: Findings from a Community and Agricultural Labor Camp Survey

Objective: To examine whether cancer-related health behaviors and screening practices differ within a population of Latino adults, including those often missed by cancer surveys.

Design: Cross-sectional survey, conducted in 2000. Sample of 461 women and 356 men from the community (75% with unlisted telephones) and 188 men from agricultural labor camps, 18–64 years of age.

Setting: Monterey County, California.

Outcomes: Six health behaviors and risk factors: obesity, poor nutrition, physical inactivity, high alcohol use, and smoking. Five health practices and screening tests used to detect cervical, breast, and colorectal cancer.

Results: Most respondents were born in Mexico, spoke Spanish, and had lived in the United States 10 years or more. In both surveys, more than 60% were overweight including more than 20% who were obese. Men, especially from labor camps, reported high dietary fat intake, low fruit intake, and high alcohol use. For every additional 5 years lived in the United States, the odds of obesity increased 25% for women, and the odds of high-fat/fast food intake and high alcohol use increased 35% and 50%, respectively for labor camp men. Screening rates for cervical and breast cancer were high and met Healthy People 2000 objectives. In contrast, screening rates for colorectal cancer were low; among those 50 and older, approximately 70%–80% of women and men from the community sample and 100% of men from the labor camp sample had never had a blood stool test. Unmarried women, in particular, had poor nutrition and low screening rates.

Conclusions: Cancer control programs for Latinos need a particular focus on weight, nutrition, physical activity, alcohol, and colorectal screening. (*Ethn Dis.* 2003;13:376–386)

Key Words: Alcohol, Colorectal Screening, Health Behaviors, Hispanic Americans, Mammography, Nutrition, Obesity, Cervical Cancer Screening, Smoking, Surveys

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Introduction

According to new census projections, Latinos will account for more than 25% of the US population by 2050.[1] Currently, 32% of California's population is Latino; within this population, 77% are Mexican-American[2] and 700,000 are agricultural farm workers.[3] One of the largest Latino populations in California lives in Monterey County, a rapidly growing coastal area known for its agricultural and service industries.

Similar to the other major racial/ethnic groups in the United States, cancer is the second leading cause of death and disability among Latinos.[4–6] Data from the California Cancer Registry on reportable cancers show that the 5 primary cancer sites for Latino women are breast, colorectal, cervix, lung, and uterus. The primary sites for Latino men are prostate, colorectal, lung, non-Hodgkin's lymphoma, and leukemia.[7] Many of these cancers are related to health behaviors and are effectively treated when detected early.[8] Despite the importance of cancer among Latinos, few studies have examined the extent to which cancer-related health behaviors and screening practices differ *within* subgroups of the Latino population. Studies are especially needed that include women and men who are often missed by cancer surveys, such as those with unlisted telephones and those living in agricultural labor camps.

We conducted a cross-sectional survey to assess cancer control needs of Latino women and men in Monterey County. Our primary aims were to: 1) determine the extent to which cancer-related health behaviors/risk factors and screening practices differed by gender and sample site (men and women from a community sample and men from an agricultural labor camp sample); 2) identify sociodemographic factors that were most strongly related to health behaviors/risk factors and screening practices; and 3) examine the extent to which healthcare providers had ever discussed risk reduction with those having the unhealthiest behaviors and risk factors. The third aim allowed us to learn more about the cancer control needs of Latinos so that programs can be developed to address those needs. The survey was conducted in collaboration with a community coalition, whose goal is to facilitate programs that promote the maintenance and/or adoption of positive health behaviors and early detection of prevalent and treatable cancers.

Methods

The survey, conducted from July to December 2000, included 2 samples of Latinos aged 18–64 years: 1) a random-digit dial telephone sample of adults in the community (community sample), and 2) a door-to-door sample of adults living in agricultural labor camps (labor camp sample). The latter group was surveyed in person because the majority of labor camp residents do not have telephones. Many of the questions from the 166-item survey were adapted from the Centers for Disease Control and Prevention's Behavioral Risk Factor Surveil-

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lance System (BRFSS) instrument (http://www.cdc.gov/nccdphp/brfss). Bilingual, bicultural women conducted all interviews.

Sampling Scheme

The sampling scheme was designed to yield a representative sample of Latino adults in Monterey County, while maximizing survey efficiency. Eighty-seven percent of Latinos in Monterey County live in the 34 census tracts that comprise eastern Monterey County.[2] Sampling was therefore limited to eastern Monterey County, which was divided into 2 strata to ensure an equal number of participants from the urban areas (stratum 1, 28 census tracts, 68% Latino) and the more rural areas (stratum 2, 6 census tracts, 78% Latino).

For the community sample, telephone numbers were purchased from a commercial sampling firm. All telephone exchanges (ie, area code and prefix) used within stratum 1 and 2 were identified. Based on these exchanges, listed and unlisted telephone numbers were drawn for each stratum. More than 75% of the telephone numbers were unlisted. Standardized call-back procedures, identical to those used for the BRFSS,[9] were followed.

Once a household was determined to be eligible, one Latino family member, aged 18 to 64 years, was randomly selected using a method developed by Kish.[10] If the selected respondent did not wish to participate, or was unavailable during the survey period, another household was selected. For the labor camp sample, adults were selected from all 24 county-licensed and 5 unlicensed labor camps (the total number of unlicensed labor camps is unknown). Housing units within each camp were randomly selected and 3 visits were made to determine whether an age-eligible Latino lived in the housing unit. One age-eligible respondent was then randomly selected from each unit. Because of the small number of women who were found to be living in labor camps and thus the small number sampled ($N=13$), their surveys were excluded from the analysis. For both samples, approximately equal numbers of interviews were completed within stratum 1 and 2.

Definition of Variables

The following screening question, developed with the guidance of community coalition members and health professionals in Monterey County, was used to determine ethnicity: "Are you of Mexican, Latino, or Hispanic background? This includes people who were born, or whose relatives were born in Mexico, Central America, or South America."

We identified and defined the following 6 cancer-related health behaviors and risk factors, shown to be associated with cancer,[11] for our analyses:

• Obesity: indicated by a body mass index (BMI) of ≥30. Body mass index (BMI) was calculated as weight in kilograms divided by height in meters squared.

• High dietary fat and/or fast food intake, summary score of 8 items measuring nutrition behaviors: usually drink whole fat milk; eat red meat every day; ate fried food yesterday; ate chips or other fried snacks yesterday; ate meal or snack at fast food restaurant yesterday; most often use lard and/or meat fat when cooking; sometimes/rarely/never trim fat from red meat; and sometimes/rarely/never remove skin from chicken. In a principal components analysis, all items loaded together and in the same direction. The top quartile of the summary score defines high intake.

• No fruit and/or vegetable consumption: no fruits or vegetables eaten on the day preceding the survey.

• Low physical activity at work and/or home: in a usual week, engage in <150 minutes of either moderate and/or vigorous physical activity at work and/or home. Because of the physically demanding nature of their work, all farm workers were coded as physically active.

• High alcohol use: among those who drank alcohol in the past month, 2 or more drinks per day of beer, wine, or liquor, and/or 5 or more drinks of alcoholic beverages on one occasion in the past month. These questions reflect different dimensions of high alcohol use and were only moderately correlated ($r=.34$ for women; $r=.62$ for men).

• Cigarette smoking: smoked at least 100 cigarettes in entire life and currently smoking cigarettes every day or some days.

Five health practices and screening tests used to detect cancers were examined: Pap tests, breast self-exams, mammograms, digital rectal exams, and blood stool (fecal occult) tests. The reasons for each health practice and screening test, and the procedures for the screening test were described to participants to enhance their understanding of the questions. We considered the following responses indicative of higher risk: breast self-exam less often than one time per month (ages 18–64); no Pap test within the past year (ages 18–64); no mammogram within the past year (ages 40 or older); and no digital rectal exam or blood stool test within the past year (ages 50 or older). Women ages 40 and older were included in our calculation of rates of mammography to be consistent with the American Cancer Society's Screening Guidelines that have

a goal that by 2008, 90% of California women ages 40 and older will be screened annually.[12]

We learned more about the cancer control needs of Latinos by examining whether healthcare providers had ever discussed exercise, nutrition, drinking, or smoking risk reduction with those with the unhealthiest behaviors and risk factors. Those with the unhealthiest behaviors/risk factors were defined as being obese (BMI ≥30.0), having high alcohol use (≥2 drinks/day in the past month and/or ≥5 drinks on one occasion in the past month), or being a current smoker. High fat and/or fast food intake was defined as being in the unhealthiest quartile of our summary score of 8 items measuring nutrition behavior.

Statistical Methods

Because health behaviors, healthcare access, and screening practices varied by gender and sample site, we conducted all analyses separately for women and men in the community sample, and men in the labor camp sample. We used multiple logistic regression models to identify the sociodemographic factors most strongly related to the health behaviors and screening practices defined above. These models used a stepwise forward procedure that forced in all main effects and then allowed for the sequential entry of first-order interactions that were significant at $P<.01$.

Given their past associations with cancer outcomes,[8] we considered the following sociodemographic factors as possible independent variables in the models: age, primary language spoken, country of birth, years lived in the United States, years of education, household income, occupation/employment status, and marital status. For the final model, we gave preference to independent variables that were continuous, exhibited sufficient variability, and were not highly collinear.[13] Primary language spoken and country of birth were excluded because they showed limited variability (eg, few respondents were English speaking and/or were born in the United States). Household income and occupation/employment status were excluded because of collinearity with education; education was selected because of its strong association with chronic disease and behavioral outcomes.[14,15]

The independent variables in our final models were defined as follows: age in years (centered at the sample mean to aid in the interpretation of the regression coefficients, ie, age minus mean age), years lived in the United States (centered at the sample mean), years of education (centered at 12 years), and marital status (married/living as married, or not married). Centering is a process that places the intercept at the mean of the independent variable.[16] The results of the models are presented as odds ratios (OR) with 95% confidence intervals (CI).

Of the variables used in analyses, missing data ranged from a low of 0% for age and 1% for years of education to a high of 9% for BMI. Observations with missing values were deleted from the analysis rather than being imputed. Participants who were missing BMI were significantly ($P<.05$) more likely to be women, were less educated, had lived in the United States fewer years, and were more likely to be Spanish speaking, but were not different on age when compared with participants who were not missing BMI.

RESULTS

For the community sample, 940 Latino women and men (ages 18–64) were selected and available during the survey period. Of these, 461 women and 356 men completed the survey, 15 terminated the survey before it was completed, and 108 refused to be interviewed (87% response rate). For the labor camp sample, 192 eligible men were identified and 188 completed the survey (98% response rate).

The sociodemographic profile of respondents shows an evolving picture of Latinos (Table 1). Most respondents were under 50 years of age. Two-thirds of the community respondents and almost all of the labor camp respondents were born in Mexico. Many Latinos are now long-term residents of the United States; approximately 80% of the community sample and almost 50% of the labor camp sample had lived in the United States for 10 years or more. The majority of all respondents spoke Spanish at home. Educational attainment was low, with only 40% of the community sample and 2% of the labor camp sample completing high school or more. Most respondents were employed for wages, many worked long hours (44% of men in the community sample worked 50 hours or more per week), and the majority held semiskilled or unskilled jobs. Overall, women and men in the community sample were similar on most sociodemographic factors.

Despite being a young population, more than 35% of the community sample and 14% of the labor camp sample rated their health as only fair or poor (Table 2). In both surveys, more than 60% of respondents were overweight including more than 20% who were obese. Other health behaviors and risk factors differed by gender and sample site. In general, women had the most positive nutrition-related behaviors and men in the labor camps had the least positive. Men in the labor camp sample were significantly more likely than women and men in the community sample to eat red meat everyday, and to have eaten fried foods, chips and fried snacks, and meals or snacks from fast food restaurants on the day preceding the survey. The labor camp sample was also significantly more likely to use lard and meat fat when cooking. Furthermore, they were significantly less likely to take steps to reduce saturated fat intake (trimming fat from red meat and removing skin from chicken). Fruit and vegetable consumption was low among all respondents; 20% or more had not

Table 1. Sociodemographic profile of Latino women and men, ages 18–64, Monterey County, California, 2000

	Community Sample		Labor Camp Sample
	Women (N=461)	Men (N=356)	Men (N=188)
Age group (%)			
18–29	31.7	37.9	39.6
30–49	53.1	48.9	55.6
50–64	15.2	13.2	4.8
Country of birth (%)			
United States (U.S.)	30.8	29.2	0.5
Mexico	67.2	69.4	98.4
South or Central America	2.0	1.4	0.5
Years lived in U.S. (%)			
0–4 years	7.9	8.5	28.0
5–9 years	12.3	10.4	25.8
≥10 years	79.8	81.1	46.2
Married/live as married (%)	68.8	66.6	31.6
Primary language spoken at home (%)			
Spanish	66.6	67.7	100.0
English	20.8	22.5	0.0
Both languages equally	12.6	9.8	0.0
Educational attainment (%)			
0–6 years	34.9	31.4	86.0
7–11 years	22.8	26.7	11.8
12 years	21.7	20.7	2.2
>12 years	20.6	21.2	0.0
Annual household income (%)			
<$15,000	41.1	31.6	69.4
$15,000–$24,999	22.9	25.3	30.1
$25,000–$34,999	13.2	15.2	0.0
≥$35,000	22.8	27.9	0.5
Employed for wages (%)	59.1	88.5	99.5
If employed, hours worked per week (%)			
<40 hours	30.9	10.0	16.2
40 hours	45.0	32.8	55.7
41–49 hours	10.0	13.5	18.4
≥50 hours	14.1	43.7	9.7
Occupational categories (%)			
Farm worker	18.6	29.9	100.0
Skilled professional	9.6	7.8	0.0
Semi-skilled white collar/clerical	20.2	6.9	0.0
Semi-skilled blue collar	2.0	29.0	0.0
Unskilled service or laborer	21.9	21.7	0.0
Homemaker	22.8	0.3	0.0
Other	5.0	4.3	0.0

eaten any fruits and/or vegetables on the day preceding the survey. About 40% of women and 30% of men from the community sample did not meet the national recommended levels of physical activity of at least 30 minutes of moderate or vigorous activity at home and/or work on most days of the week (≥150 minutes/week).

Alcohol and smoking also varied by gender and sample site. Men from the community sample were significantly more likely to drink alcohol than the other 2 groups. Among those who reported drinking in the past month, women reported the lowest prevalence of high alcohol use and men from the labor camp sample reported the highest. Among those who drank, 29% of men from the community sample and 79% of men from the labor camp sample reported drinking 2 or more drinks per day; 36% and 87%, respectively, reported drinking 5 or more drinks on one occasion in the past month.

In contrast to other health behaviors, the prevalence of smoking was low among all respondents, with most women from the community sample and men from the labor camp sample reporting that they had never smoked (more than 80%). Although men from the community sample were more than twice as likely to smoke as women, a number had quit smoking (30%) and cigarette consumption was low among current smokers (mean of 7 cigarettes per day).

Health insurance coverage was low for both samples, with nearly one-third of the community sample and two-thirds of the labor camp sample reporting no health insurance (Table 3). Although most from the community sample (but significantly fewer from the labor camp sample) had seen a doctor during the past year, many respondents reported that they had been unable to afford a doctor and/or fill a prescription when needed.

Recent screening for prevalent and treatable cancers was highly variable by type of cancer detection test. Screening for cervical and breast cancer was relatively high; within the past year, more than 70% of women aged 18 and older had received a Pap test and more than 50% of women aged 40 and older had received a mammogram. In contrast, screening for colorectal cancer was low. Among those aged 50 and older, approximately 70%–80% of women and men from the community sample and 100% of men from the labor camp sample had never received a blood stool test.

The multiple regression analysis identified sociodemographic factors that were most strongly related with health behaviors after adjusting for age, years lived in the United States, years of education, and marital status (Table 4). Younger age was associated with higher odds of high fat/fast food intake for women and men from both samples.

Table 2. Health behaviors and risk factors related to cancer, Latino women and men, ages 18–64, Monterey County, California, 2000

	Community Sample		Labor Camp Sample	
	Women (*N*=461)	Men (*N*=356)	Men (*N*=188)	P Value*
Perceived health status (%)				
Excellent/very good	33.2	33.1	56.9	<.001
Good	31.5	28.7	28.7	
Fair/poor	35.3	38.2	14.4	
Body mass index (%)				
Normal <25.0	35.8	29.6	39.2	NS
Overweight 25.0–29.9	40.5	49.5	40.4	
Obese ≥30.0	23.7	20.9	20.4	
High dietary fat and/or fast food intake (%)				
Usually drink whole (4%) fat milk	34.3	40.6	35.7	NS
Eat red meat every day	2.4	8.7	24.1	<.001
Ate fried food yesterday	54.0	65.7	76.6	<.001
Ate chips/fried snacks yesterday	21.3	29.2	53.2	<.001
Ate meal or snack at fast food restaurant yesterday	19.1	25.6	39.2	<.001
Use lard/meat fat when cooking	2.3	3.3	27.3	<.001
Sometimes/rarely/never trim fat from red meat	27.1	46.6	83.1	<.001
Sometimes/rarely/ never remove skin from chicken	21.3	40.2	66.8	<.001
Ate no fruit yesterday (%)	14.8	21.1	21.9	<.05
Ate no vegetables yesterday (%)	19.3	26.2	24.5	NS
Low physical activity at work and/or home (%)				
<150 minutes of moderate and/or vigorous exercise in usual week (farm workers from all 3 groups coded as physically active)	43.2	29.2	N/A	<.001
Drank alcohol in past month (%)	34.5	65.7	37.2	<.001
≥2 drinks/day in past month	1.8	20.4	27.8	<.001
≥5 drinks on one occasion in past month	5.4	23.8	32.1	<.001
If drank in past month (%)				
≥2 drinks/day in past month	5.4	29.2	79.0	<.001
≥5 drinks on one occasion in past month	15.8	36.4	87.0	<.001
Smoking status (%)				
Never smoked	84.4	49.6	82.4	<.001
Formerly smoked	9.1	30.1	0.5	
Currently smoke	6.5	20.3	17.0	
Cigarettes/day among current smokers (mean)	6.2	7.1	14.0	<.01
Others smoke in household	18.0	18.8	25.1	NS

* Based on chi-square or ANOVA tests. NS=not significant.

Years in the United States was also associated with health behaviors. For every one additional year lived in the United States, there was a higher odds of obesity for women (OR 1.05) and a higher odds of high fat/fast food intake (OR 1.07) and high alcohol use (OR 1.10) for men from the labor camp sample. Thus, for every 5 additional years lived in the United States, the odds of obesity increased 25% for women, and the odds of high fat/fast food intake and high alcohol intake increased 35% and 50% respectively for labor camp men. For women, being unmar-ried was associated with more than twice the odds of no fruits and/or vegetable intake and high alcohol use. There was only one interaction from the models that was statistically significant (age × education for fruits and vegetables for men from the community sample) but it did not appear to be clinically meaningful.

The only 2 sociodemographic factors that were significantly related to cancer health practices and screening tests were for unmarried women (Table 5). Unmarried women had approximately twice the odds of not receiving a Pap test or mammogram in the past year, and/or not conducting a breast self-exam in the past month compared with married women. The low screening among unmarried women was apparent across all ages (data not shown).

The extent to which healthcare providers had ever discussed risk reduction with those having the unhealthiest behaviors and risk factors varied substantially by gender and sample site (Table 6). For every health behavior and risk factor, high-risk women from the community sample were the most likely to report discussions with healthcare providers (50%–78% of

Table 3. Healthcare access, cancer health practices and cancer screening tests, Latino women and men, ages 18–64, Monterey County, California, 2000

	Community Sample		Labor Camp Sample	
	Women (*N*=461)	Men (*N*=356)	Men (*N*=188)	*P* Value*
Health insurance coverage (%)				
None	28.1	30.9	65.4	<.001
Private	51.0	62.6	33.5	
Public (government)	20.9	6.5	1.1	
Visited doctor/healthcare provider (%)				
Within past year (0–12 months)	89.7	74.3	45.7	<.001
1–2 years ago (13–24 months)	6.3	10.1	3.5	
2–5 years ago (25–60 months)	2.2	8.4	24.3	
>5 years ago or never (>60 months)	1.8	7.2	26.6	
Any time in past year when needed to see a doctor but could not afford it? (%)	32.5	19.4	63.3	<.001
Any time in past year when needed to fill a prescription but could not afford it? (%)	28.7	16.9	59.6	<.001
Pap test (%)				
Within past year	71.4	N/A	N/A	
1–3 years ago	15.2	N/A	N/A	
4 years or more	3.9	N/A	N/A	
Never	9.5	N/A	N/A	
Breast self-exam, <1 time/month (%)	29.1	N/A	N/A	
Mammogram (≥40 years old) (%)				
Within past year	53.2	N/A	N/A	
1–2 years ago	15.6	N/A	N/A	
3 years or more	4.6	N/A	N/A	
Never	26.6	N/A	N/A	
Digital rectal exam (≥50 years old) (%)				
Within past year	31.4	19.1	0.0	<.001
1–2 years ago	8.6	23.4	0.0	
3 years or more	8.6	4.3	0.0	
Never	51.4	53.2	100.0	
Blood stool test (≥50 years old) (%)				
Within past year	17.1	6.4	0.0	<.001
1–2 years ago	4.3	12.8	0.0	
3 years or more	7.2	0.0	0.0	
Never	71.4	80.8	100.0	

* Based on chi-square tests. NS=not significant.

those at highest risk), high-risk men from the community sample were the second most likely (33%–54%), and high-risk men from the labor camp sample were the least likely (8%–39%). For example, among men in the labor camp sample who reported high alcohol use, only 9% reported that a healthcare provider had ever discussed alcohol or drinking with them.

DISCUSSION

The results of this survey offer insight about cancer control needs for La-tino women and men, of primarily Mexican heritage. Our sample of men from agricultural labor camps, inclusion of adults with unlisted telephone numbers (75% of the community sample), and high response rates (98% for the labor camp sample and 87% for the community sample) allowed us to reach Latino women and men who are often missed by cancer surveys. Our results show a young Latino population, with the majority born in Mexico and speaking Spanish as their primary language. While they represent an increasingly sta-ble population that has lived in the United States for many years, a large proportion remains medically under-served.

Almost two-thirds of both samples were overweight or obese. Men from the labor camps reported the highest dietary fat intake and poorest nutrition related behaviors, lowest fruit intake, and high-est alcohol intake. These latter findings are congruent with a 1999 study of 971 farm workers from 7 California com-munities. The study found that 81% of male workers aged 20–74 were either overweight or obese, and more than 7% of workers aged 50–69 suffered from

Table 4. Odds ratios and 95% confidence intervals from stepwise multiple logistic models examining sociodemographic factors related to health behaviors and risk factors, ages 18–64*

	Obese (≥30.0 BMI)	High Fat and/or Fast Food Intake (summary score, 8 items highest quartile)	Ate No Fruits and/or Vegetables Yesterday	Low Physical Activity at Work and/or Home (<150 minutes in usual week)	High Alcohol Use (≥2 drinks/day and/or ≥5 drinks on one occasion, past month)	Current Smoker
Women, community sample						
Age in years	0.99 (0.95–1.02)	0.97 (0.94–0.99)†	0.98 (0.95–1.01)	1.02 (0.99–1.04)	0.96 (0.91–1.01)	1.01 (0.96–1.06)
Years lived in U.S.	1.05 (1.02–1.08)‡	1.00 (0.98–1.02)	1.01 (0.99–1.03)	1.00 (0.98–1.02)	1.02 (0.98–1.07)	1.01 (0.98–1.05)
Years of education	0.89 (0.82–0.95)‡	0.98 (0.92–1.03)	0.96 (0.90–1.01)	1.00 (0.95–1.06)	1.07 (0.95–1.20)	1.04 (0.94–1.15)
Not married	0.74 (0.42–1.28)	1.32 (0.86–2.03)	2.28 (1.48–3.53)§	0.78 (0.51–1.20)	2.31 (1.05–5.11)†	1.03 (0.46–2.29)
Men, community sample						
Age in years	1.02 (0.98–1.06)	0.95 (0.92–0.99)‡	0.99 (0.96–1.02)	1.03 (0.99–1.07)	0.99 (0.96–1.02)	0.99 (0.96–1.03)
Years lived in U.S.	1.02 (0.99–1.05)	1.01 (0.98–1.04)	1.00 (0.97–1.03)	0.99 (0.96–1.02)	1.02 (0.99–1.05)	1.00 (0.97–1.04)
Years of education	1.01 (0.94–1.09)	0.97 (0.91–1.03)	0.94 (0.88–1.00)	1.04 (0.97–1.12)	0.98 (0.92–1.05)	0.97 (0.90–1.04)
Not married	0.84 (0.44–1.59)	0.61 (0.36–1.04)	1.25 (0.74–2.13)	1.05 (0.57–1.93)	1.13 (0.66–1.94)	1.42 (0.78–2.61)
Men, labor camp sample						
Age in years	1.11 (1.04–1.19)‡	0.93 (0.88–0.98)‡	1.01 (0.96–1.06)		0.95 (0.90–1.01)	0.99 (0.93–1.06)
Years lived in U.S.	0.97 (0.92–1.03)	1.07 (1.01–1.13)†	1.02 (0.97–1.08)		1.10 (1.04–1.16)§	1.06 (0.99–1.13)
Years of education	0.99 (0.85–1.14)	0.92 (0.81–1.04)	1.00 (0.89–1.13)		1.06 (0.94–1.19)	0.92 (0.78–1.08)
Not married	0.92 (0.40–2.14)	0.70 (0.34–1.44)	0.82 (0.41–1.67)		1.20 (0.57–2.49)	1.06 (0.44–2.54)

* Odds ratios from stepwise forward model that forced in all main effects and then allowed for the sequential entry of first-order interactions that were significant at $P<.01$.
† $P<.05$.
‡ $P<.01$.
§ $P<.001$.

iron deficiency anemia.[3] The report concludes that, "It is a tragedy and more than a little ironic that the labor force that is responsible for producing such a great abundance of healthy food in California should themselves be suffering from the effects of poor nutrition."[3]

Screening rates for prevalent and treatable cancers was highly variable by type of cancer detection test; screening rates for cervical and breast cancer were high and screening rates for colorectal cancer were low. The low colorectal screening rates most likely result from multiple patient, physician, and financial barriers. Patients may be reluctant to have the procedure or test performed, or may not understand the directions for collecting stool samples. Physicians may not give colorectal screening a high priority because of concerns about patient compliance with follow-up tests, cost and complexity of follow-up tests, and lack of efficacy data.[17] Addressing

Table 5. Odds ratios and 95% confidence intervals from stepwise multiple logistic models examining sociodemographic factors related to cancer health practices and cancer screening tests*

	No Digital Rectal Exam, Past Year (≥50 years old)	No Blood Stool Test, Past Year (≥50 years old)	No Pap Test, Past Year (18–64 years old)	No Breast Self-Exam Past Month (18–64 years old)	No Mammogram, Past Year (≥40 years old)
Women, community sample					
Age in years	0.97 (0.84–1.11)	0.92 (0.77–1.10)	0.99 (0.96–1.02)	0.98 (0.96–1.01)	0.97 (0.91–1.02)
Years lived in U.S.	0.99 (0.96–1.03)	0.99 (0.94–1.03)	1.01 (0.99–1.03)	0.99 (0.98–1.01)	0.98 (0.96–1.01)
Years of education	0.90 (0.79–1.03)	0.94 (0.80–1.10)	0.99 (0.93–1.05)	0.99 (0.94–1.05)	1.02 (0.95–1.10)
Not married	0.72 (0.24–2.13)	1.91 (0.45–8.07)	2.41 (1.56–3.71)§	1.59 (1.06–2.40)†	2.19 (1.10–4.34)†
Men, community sample					
Age in years	0.87 (0.71–1.07)	1.24 (0.65–2.39)			
Years lived in U.S.	1.00 (0.92–1.08)	0.82 (0.48–1.38)			
Years of education	0.96 (0.77–1.19)	0.88 (0.48–1.63)			
Not married	0.98 (0.16–5.94)	0.68 (0.04–12.44)			

The odds ratios are not presented for men in the labor camp sample because no men reported a digital rectal exam or blood stool test.
* Odds ratios from stepwise forward model that forced in all main effects and then allowed for the sequential entry of first-order interactions that were significant at $P<.01$.
† $P<.05$.
‡ $P<.01$.
§ $P<.001$.

Table 6. Extent to which a healthcare provider had ever discussed risk reduction with those having the unhealthiest behaviors and risk factors, ages 18–64

	Risk Group				
	Obese	Obese	High Fat and/or Fast Food Intake	High Alcohol Use	Current Smoker
Did healthcare provider ever discuss:	*Exercise or physical activity*	*Nutrition or diet*	*Nutrition or diet*	*Alcohol or drinking*	*Smoking*
Women, community sample	65.6	77.8	49.7	53.6	76.7
Men, community sample	50.0	54.3	32.6	38.3	50.0
Men, labor camp sample	26.3	31.6	7.9	9.0	38.7

these barriers is critical because colorectal screening is an effective strategy for reducing colorectal mortality,[18,19] and incidence rates have been increasing among Hispanic populations, particularly among men[20] and successive generations of immigrants from Central and Latin America.[21]

Healthy People 2000 Comparison

We conducted an ancillary analysis to compare our results to Healthy People 2000 objectives that are specific to Hispanics, using similar age cutpoints[22] (see Tables 2 and 3 for prevalences in our survey population). Our respondents fell severely short of the Healthy People 2000 goals of reducing the prevalence of overweight to no more than 25% among Hispanic women and 20% of Hispanic men, aged 20 and older. More than 60% of our respondents were overweight or obese. In contrast, our respondents met, or almost met, the goals for smoking (prevalence of 18% or less for Hispanics aged 18+). For cancer detection screening tests, women almost met the goal of ever having a Pap test (goal of 95% for women aged 18+) and exceeded the goal of having a Pap test within the preceding 3 years (goal of 80% for women aged 18+). Furthermore, women who were 50 and older in our sample (data not shown) exceeded the goal for receiving a mammogram within the preceding 2 years (goal of 60% for women aged 50+). In contrast, both women and men fell short of

the goal for receiving a blood stool test within the preceding 2 years (goal of 50% for people aged 50+). Only 20% of women and men 50 and older from our community sample and none of the men from the labor camp sample had received a blood stool test within this time frame.

Comparison with Past Studies

Our findings are consistent with past cancer surveys that have evaluated protective and high risk factors in Latino populations. Most of these surveys have emphasized comparisons with White, non-Hispanic populations rather than comparisons within Latino populations. Compared with White, non-Hispanics, these past studies have documented higher excess weight in Mexican-American children and women,[15,23] higher consumption of saturated fat and lower consumption of fruits and/or vegetables in Latino children, women, and men[24–26]; lower leisure time physical activity in Mexican-American women[15]; higher binge drinking in Latino men[25]; and lower smoking rates and lower consumption of cigarettes in Mexican-American women and men.[27,28]

The associations we found between length of time lived in the United States (an indicator of level of acculturation) and obesity and high fat/fast food intake are consistent with analyses of Mexican-American adults from NHANES III.[29] These analyses examined associations between country of birth, language spoken, and health behaviors. Results show

that Mexican-American adults born in the United States (especially those who were Spanish-speaking) had higher levels of obesity and consumed significantly more fat and less fiber than those born in Mexico.

Our findings are also consistent with screening studies that have documented dramatic improvements in cancer screening in lower income ethnic minority women and men in the last 20 years,[30,31] with the exception of older adults.[32–34] Like our findings, previous surveys have shown that Latinas meet national goals for Pap screening[35] and mammography.[36,37] Previous surveys have also documented low screening for colorectal cancers among Mexican-Americans.[35,38]

Possible Limitations

Several limitations should be considered when interpreting our results. Most of our sample was of Mexican heritage and thus, results are not generalizable to broader Latino populations such as those from Puerto Rico or Cuba. However, our sample, unlike many past surveys that have aggregated disparate Latino populations, was relatively homogeneous in its cultural, social, and economic background. The respondents from our labor camp sample appear to be fairly representative of farm workers in California, sampled from 7 California communities.[3] The women and men from our community sample were more medically under-served and had lower incomes and educational attainment

than Mexican Americans in the United States.[15] Their results therefore yield information about a sample of Mexican-American women and men who are often not included in cancer surveys.

Our self-reported data are subject to bias because of a lack of clinical measurement.[39,40] To assess potential bias in our obesity findings, we compared the self-reported data from our community sample to findings for almost 4,000 Mexican-American women and men, aged 18–64, from NHANES III, where height and weight were based on clinical measurements. The age distributions of this sample and NHANES were similar, as was the proportion who were obese (21% vs 20% for men, 24% vs 32% for women), lending credence to our obesity findings. Our physical activity findings are also subject to bias. Like all surveys of populations where many respondents work in physically demanding semiskilled and unskilled occupations, physical activity is difficult to measure. Although we assessed both leisure and non-leisure time physical activity, this health behavior is difficult to measure in a precise manner, especially when only using a limited number of questions.

Self-reports of cancer screening tests may also be subject to bias. For example, Hiatt et al used medical records from patients in a healthcare plan to validate self-reports of 6 cancer screening tests and found that both Hispanics and Whites in Northern California overestimated their occurrence.[39] Hispanic women overestimated breast, cervical, and colorectal screening by approximately 20%–30%, and Hispanic men overestimated colorectal screening by approximately 50%. Thus, our sample may not be as close to the Healthy People 2000 objectives for Pap and mammography screening as we estimated.

Finally, our sample of women and men was relatively young, like the Latino population in the United States. Thus, the number of women and men aged 50 and older, included in our analyses for colorectal screening was relatively small (70 women and 56 men).

Among the health behaviors and risk factors that deserve the greatest attention are overweight, high fat/fast food intake, and high alcohol use, all of which are related to primary cancer sites.[41]

Implications

Our findings have implications for cancer control programs for Latino populations. Among the health behaviors and risk factors that deserve the greatest attention are overweight, high fat/fast food intake, and high alcohol use, all of which are related to primary cancer sites.[41] These risk factors and behaviors were associated with number of years lived in the United States, with a longer time lived in the United States being associated with higher obesity, poorer nutrition, and higher excessive alcohol use. Although not evaluated in this study, past studies have shown that these factors are strongly influenced by broad environmental factors such as the promotion and availability of processed foods, fast foods high in saturated fat, and alcohol.[41]

We identified several groups that need special attention and outreach. Labor camp men exhibited unhealthy behaviors and low screening rates. This is most likely due to a constellation of factors including low incomes, low educational attainment, language barriers, isolation from mainstream society, and low medical care access. Another group at particular risk was unmarried women who had more than twice the odds of low fruit and/or vegetable intake and high alcohol use than married women. Furthermore, they had approximately twice the odds of not receiving a Pap test or mammogram in the past year, and/or not conducting a breast self-

exam in the past month. These findings were consistent for unmarried women across all ages. It is important for unmarried women to understand that they are at risk for cancer. Furthermore, it is important for future studies to understand why unmarried Latina women exhibit unhealthy behaviors and low screening rates.

Adults who lack adequate health insurance are also at high risk of poor health. Nearly one-third of women and men in the community sample and two-thirds of men in the labor camp sample had no health insurance. Many more certainly had inadequate health insurance. Access to healthcare services is strongly linked with knowledge about cancer prevention, and successful cancer screening, detection, and treatment.[8] Furthermore, access to care can increase the opportunity for those at highest risk of cancer to discuss their unhealthy behaviors with healthcare providers.

In summary, cancer control programs for Latinos need to promote the maintenance and/or adoption of healthy behaviors, with a particular focus on weight, nutrition, physical activity, and alcohol use. In addition, outreach efforts should focus on the early detection of treatable cancers, particularly colorectal cancer. Special outreach should be made to men from labor camps, unmarried women, and women and men with increasing "exposure" to the unhealthy US food and alcohol environment. For cancer control programs to be effective, programs must increase access to health care, improve patient and physician interactions, consider the social and cultural needs of Latino patients,[1,42,43] and address underlying determinants of health that influence health behaviors and screening practices.

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