

Ten-Year Changes in Cancer-Related Health Behaviors and Screening Practices among Latino Women and Men in California

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Objective. *This study examines changes in cancer-related health behaviors and risk factors (overweight/obesity, unhealthy diet, high alcohol use, and smoking), and screening practices related to cervical, breast, and colorectal cancer among Latinos of predominantly Mexican origin in Monterey County, California.*

Design. *Data is from two cross-sectional surveys, conducted in 1990 and 2000, that included 919 women and 774 men from a community sample, and 276 men from an agricultural labor camp sample (ages 18–64).*

Results. *Over the 10-year period, the prevalence of obesity increased by 48% among community women, 47% among community men, and 91% among labor camp men. Although consumption of fruits and vegetables remained low and consumption of fried foods remained high, other diet-related behaviors showed significant improvements (e.g. milk consumption shifted from whole-fat to lower-fat among women from the community and men from the labor camps, use of lard or meat fat when cooking decreased among women and men from the community). In addition, alcohol intake decreased among men from both samples, as did smoking among labor camp men. There were large improvements for annual pap and mammography screening (increases from 53 to 71% for pap testing, and from 15 to 53% for mammography screening) but annual blood stool testing remained infrequent and unchanged.*

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Conclusion. *These findings highlight the need for interventions and policies that improve knowledge, preventive care, and social environments to sustain improvements and address areas of special need in cancer prevention for Latinos, especially related to obesity and colorectal screening.*

Keywords: Alcohol Drinking; Health Behaviors; Hispanic Americans; Cervical Cancer Screening; Colorectal Screening; Mammography; Nutrition; Smoking; Obesity

Introduction

Cancer is the second leading cause of death among US Latinos, accounting for 20% of their total mortality (Anderson 2002; American Cancer Society 2003). Although most age-adjusted cancer incidence rates are approximately 20–60% lower among Latinos than among non-Latino whites (O'Brien *et al.* 2003), Latinos are about two times more likely to be diagnosed with several major cancers, including cervical, liver, and stomach cancer (Ries *et al.* 2004). Furthermore, Latinos are frequently diagnosed with cancer at a later stage (Fox & Roetzheim 1994; Miller *et al.* 1996; Menck & Mills 2001), and are almost 20% more likely to die of a malignancy than non-Latino whites (Jemal *et al.* 2004).

The primary cancer sites for Latina women are breast, colorectal, lung, cervix, and stomach, and for Latino men are prostate, lung, colorectal, and stomach (Canto & Chu 2000; Ries *et al.* 2004). These cancers are associated with preventable risk factors and many can be easily diagnosed by screening and effectively treated, resulting in improved outcomes. While population-based studies have shown significant reductions in cervical and breast cancer incidence, morbidity, and mortality from systematic pap and mammography screening (Ball & Madden 2003; Klemi *et al.* 2003; Ernst *et al.* 2004), Latina women are often less likely than non-Latina white women to have systematic screening (Blackman *et al.* 1999; US Department of Health and Human Services 2000). Similarly, controlled trials in the USA and Europe have shown significant reductions in colorectal cancer incidence and mortality from blood stool or fecal occult blood testing (Hardcastle *et al.* 1989; Mandel *et al.* 1993, 2000). Colorectal screening is an important area for emphasis in Latino populations as colorectal cancer incidence rates have been increasing, particularly among men (Chao *et al.* 1998) and successive generations of immigrants from Central and Latin America (Thomas & Karagas 1987).

Cancer and its related health behaviors and risk factors are an increasing health concern for Latinos, especially because of their rapid population growth and changing age distribution. Latinos are the largest ethnic minority group in the USA and will account for over 25% of the US population by 2050 (US Census Bureau 2001). Projections show that the Latino population aged 75 and older will increase nine-fold from 2000 to 2050 (US Census Bureau 2001), resulting in a dramatic increase in the burden of cancer in the next 50 years.

Although some previous studies of Latino populations have examined health behaviors, risk factors, and screening practices related to cancer, gaps remain in the literature. Few studies have compared changes in prevalence over the last decade. Moreover, few studies have examined changes in Latino populations of predominantly Mexican origin, a group that comprises the largest number of Latinos in the USA. Furthermore, few studies have assessed whether changes have differed within the Mexican population.

The goal of this study was to examine changes in cancer-related health behaviors, risk factors, and cancer screening practices over the last decade in a sample of Latinos of mainly Mexican origin to identify areas of need in cancer control efforts, and to elucidate potential avenues for future education and intervention programs. The sample included women and men from a community sample as well as men from an agricultural labor camp sample, a group that is often underrepresented in epidemiological surveys.

Methods

Study Design and Population

Data are from two separate cross-sectional surveys, conducted over a 10-year period (1990 and 2000) in Monterey County, California, an area with a large Latino population. Each survey used a similar sampling scheme and included adults 18–64 years of age who were sampled from: (1) urban and rural census tracts in the county using random-digit dialing, given that preliminary household canvassing indicated that most residents had telephones (the community sample), and (2) agricultural labor camps using door-to-door canvassing of randomly selected households (the labor camp sample). Multiple calls or visits were made to determine if a household was eligible; if there was more than one Latino aged 18–64 in the household, one person was randomly selected (Kish 1995). This sampling scheme assured the inclusion of women and men often missed in surveys of this kind and provided a cross section of the population at large, given the high study response rates (77 and 98% in 1990, and 87 and 98% in 2000 for the community and labor camp samples, respectively).

The following screening question, developed with the guidance of local community coalition members and health professionals, was used to determine eligibility: 'Are you or is anyone in your household of Mexican, Latino, or Hispanic background? This includes people who were born, or whose relatives were born in Mexico, Central America, or South America.'

Interviews were conducted in English or Spanish, by bilingual women, using a 166-item instrument similar to that developed for the Centers for Disease Control and Prevention's Behavioral Risk Factor Surveillance System (<http://www.cdc.gov/nccdphp/brfss>). At the time of the survey, respondents were asked whether they preferred being interviewed in Spanish or English. Based on their response, the

appropriate survey instrument was administered; 53% of respondents from 1990 and 47% of respondents from 2000 were interviewed in Spanish.

Since only small numbers of women (23 in 1990 and 13 in 2000) were surveyed in the labor camp sample, a reflection of the small number of women residing at these sites, they were excluded from the analyses.

The appropriate university Institutional Review Board granted human subjects approval for the study. Further details of the study design and sampling approach as well as descriptive characteristics of the surveyed population have been published (Winkleby *et al.* 2003; Hubert *et al.* 2005).

Measures

Sociodemographic and acculturation factors

Age in years, country of birth (USA, Mexico, South or Central America), years lived in the USA, marital status (married/living as married, not married), primary language spoken at home (Spanish, English), employed for wages (yes/no), hours worked per week, years of education, and annual household income.

Healthcare access

Health insurance coverage (yes/no), frequency of doctor/healthcare provider visits, inability to see a doctor or fill a prescription in the past year because of lack of money (yes/no).

Health behaviors and risk factors

Overweight/obesity: body mass index (BMI), calculated as weight in kg/height in m² in response to the questions 'About how much do you weigh without shoes?' and 'About how tall are you without shoes?' was used to define overweight (BMI 25.0–29.9 kg/m²), and obesity (BMI \geq 30.0 kg/m²).

Diet: no fruits and/or no vegetables eaten on the day preceding the survey; usually drink whole-fat milk; eat red meat every day; ate fried food yesterday; use lard/meat fat when cooking; rarely or never trim fat from red meat; and rarely or never remove skin from chicken.

Alcohol use: consumed alcoholic drinks (beer, wine, liquor) in past month (yes/no); consumed five or more drinks on one occasion in the past month (binge drinking).

Cigarette smoking: smoked at least 100 cigarettes in entire life and currently smoking cigarettes every day or some days (current smoking); number of cigarettes smoked per day.

Cancer screening practices

Meeting the current American Cancer Society screening guidelines (Smith *et al.* 2003) for the following cancers:

- Cervical cancer: pap test within the past year (12 months), women, ages 18 or over.
- Breast cancer: mammogram within the past year, women, ages 40 or over.
- Colorectal cancer: blood stool test (fecal occult blood testing) within the past year, women and men, ages 50 and over.

Statistical Methods

We conducted analyses separately for women and men from the community sample and men from the labor camp sample to test the following hypotheses based on our knowledge about current trends in cancer-related health behaviors and risk factors:

1. Obesity will increase among women and men in the community sample and men in the labor camp sample. Health behaviors associated with good diet (e.g. high consumption of fruits and vegetables, low consumption of fried foods) will show few improvements.
2. Alcohol intake will decrease among men in both samples and will remain low among women because of health education efforts and public policies that address the dangers of heavy drinking; smoking will remain low in both the community and labor camp samples because of Latino cultural norms against tobacco use.
3. Cervical and breast cancer screening will increase among women in the community sample because of health education efforts and standardization of health screening practices.
4. Colorectal cancer screening will remain low among women and men from the community sample and men from the labor camp sample because of personal and physician barriers, and low health insurance coverage.

Means or frequencies of sociodemographic and acculturation factors, healthcare access, and cancer-related health behaviors and risk factors in 1990 and 2000 were calculated. The percentages of women and men who met current screening guidelines in 1990 and 2000 were also calculated. Differences in these measures between 1990 and 2000 were tested within each group (women and men from the community sample and men from the labor camp sample) using chi-square tests for categorical variables and *t*-tests for continuous variables. Since the chance of any overlap in the two samples was very small, given the large population of Latino adults in the sampled areas of Monterey County and the high mobility of men in labor camps, the two samples were considered independent for statistical testing. 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.

Results

Sociodemographic and Acculturation Factors

In 1990 and 2000, respectively, 458 and 461 women, and 418 and 356 men from the community, and 88 and 188 men from the labor camp were surveyed (Table 1). The population was young, with a mean age of about 35 years. The majority of respondents were born in Mexico, South or Central America (about 60–70% of the community sample and 95–100% of the labor camp sample). Almost all individuals in this subgroup were born in Mexico (98%). The majority of the community sample and about one-half of the labor camp sample had lived in the USA for 10 or more

Table 1 Sociodemographic and Acculturation Factors, and Healthcare Access, Women and Men, Ages 18–64, Monterey County, CA, 1990 and 2000

	Community sample				Labor camp sample	
	Women		Men		Men	
	1990	2000	1990	2000	1990	2000
<i>N</i>	458	461	418	356	88	188
<i>Sociodemographic and acculturation factors</i>						
Age, mean	33.7	36.6***	34.1	34.9	32.8	33.3
Born in Mexico, South or Central America (%)	59.2	69.2**	64.4	70.8	94.3	99.5*
Lived in USA ≥10 years (%)	64.1	79.8***	63.7	81.1***	53.0	46.2
Married/live as married (%)	68.3	68.8	74.3	66.6*	60.2	31.6***
Spanish, primary language spoken at home (%)	57.9	79.2***	60.8	77.5***	95.3	100.0*
Employed for wages (%)	56.6	59.1	87.8	88.5	93.2	99.5**
If employed, >40 hours per week (%)	18.4	24.2	47.9	57.2*	40.5	28.1
<12 years education (%)	65.5	57.7*	64.8	58.1	87.5	97.8**
Annual household income <\$25,000 (%)	75.9	64.0***	71.4	56.9***	93.2	99.5**
<i>Healthcare access</i>						
No health insurance coverage (%)	35.6	27.8*	34.4	30.9	52.3	65.4
Visited doctor/healthcare provider within:						
Past year (%)	61.8	89.7***	45.6	74.3***	49.4	45.7***
1–2 years ago (%)	16.9	6.3	18.6	10.1	10.6	3.5
2–5 years ago (%)	12.1	2.2	15.7	8.4	4.7	24.3
>5 years ago or never (%)	9.2	1.8	20.1	7.2	35.3	26.6
Any time in past year when needed to see a doctor but could not afford it (%)	31.4	32.5	18.4	19.4	19.3	63.3***
Any time in past year when needed to fill prescription but could not afford it (%)	25.6	28.7	12.9	16.9	17.1	59.6***

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. Chi-square tests were used to test for significance across all response categories between 1990 and 2000 within the three groups, except for mean age for which a t -test was used.

years; this increased significantly for women and men from the community over the last decade. The proportion of respondents reporting Spanish as the primary language they spoke at home increased significantly—to over 75% for women and men from the community and to 100% for the labor camp men in 2000. A large proportion of the respondents were employed for wages, with an increasing number of men from the community working more than 40 hours per week. Years of education and annual household income remained low and showed few meaningful gains during the last decade, especially among labor camp men.

Healthcare Access

Health insurance coverage showed few gains from 1990 to 2000 with approximately 30% of the community sample and 65% of the labor camp sample reporting no coverage in 2000 (Table 1). However, significant improvements were made in visits to a doctor or healthcare provider for both samples; in 2000, the majority of the community sample had seen a doctor in the past year and the majority of the labor camp sample had seen a doctor in the past five years. The increased interactions with healthcare providers did not ensure ability to afford care; one-fifth to one-third of the community sample and almost two-thirds of the labor camp sample reported that they had been unable to afford a doctor or fill a prescription when needed in the past year. These indicators of poor healthcare coverage increased significantly from 1990 to 2000 for labor camp men.

Health Behaviors and Risk Factors

As hypothesized, obesity increased significantly among women and men in the community sample and among men in the labor camp sample from 1990 to 2000 (Table 2). This is consistent with trends in the USA and findings from cross-sectional surveys of Latinos (Villarejo *et al.* 2000; Flegal *et al.* 2002). The increases in obesity for men were especially large, with the prevalence increasing about 50% for community men and about 90% for labor camp men over the 10-year period. Health behaviors associated with some dietary behavior (high consumption of fruits and vegetables, low consumption of fried foods) showed few improvements. Considerable proportions of the samples (15–26%) continued to report that they had not eaten any fruits and/or vegetables on the day preceding the survey in 2000. All groups continued to report high consumption of fried foods in the day preceding the survey (54–77% in 2000). There were, however, some significant dietary behavior improvements. Women from the community and men from the labor camp reported large changes in drinking whole milk from 1990 to 2000 (33 and 55% decreases, respectively), showing a shift from whole-fat to lower-fat milk consumption.

For other dietary practices related to high fat intake, women and men from the community generally had the most positive changes, such as less frequent use of

Table 2 Health Behaviors and Risk Factors Related to Cancer, Women and Men, Ages 18–64, Monterey County, CA, 1990 and 2000

	Community sample				Labor camp sample	
	Women		Men		Men	
	1990	2000	1990	2000	1990	2000
<i>Risk factors/health behaviors</i>						
<i>Overweight/obesity</i>						
Overweight (25.0–29.9 BMI) (%)	35.6	40.5	45.2	49.5	53.3	40.4
Obese (≥ 30.0 BMI) (%)	16.0	23.7*	14.2	20.9*	10.7	20.4*
<i>Smoking</i>						
Currently smoke (%)	9.6	6.5	21.3	20.3	28.4	17.0*
Cigarettes/day among current smokers (mean)	10.9	6.2	9.4	7.1	14.0	11.7
<i>Alcohol use</i>						
Drank alcohol in past month (%)	31.0	34.5	69.9	65.7	65.9	37.2***
≥ 5 drinks on one occasion in past month (%)	6.3	5.4	37.6	23.8***	37.5	32.1
<i>Diet</i>						
Ate no fruit yesterday (%)	21.1	14.8	34.8	21.1	33.0	21.9
Ate no vegetables yesterday (%)	33.3	19.3*	26.1	26.2	31.8	24.5
Usually drink whole-fat milk (%)	51.4	34.3***	51.5	40.6	78.9	35.7***
Eat red meat every day (%)	8.3	2.4***	11.7	8.7	17.1	24.1
Ate fried food yesterday (%)	59.4	54.0	64.1	65.7	80.7	76.6
Use lard/meat fat when cooking (%)	12.2	2.3***	13.6	3.3***	25.6	27.3
Rarely/never trim fat from red meat (%)	11.0	10.9	18.6	26.1*	20.7	51.4***
Rarely/never remove skin from chicken (%)	23.8	7.6***	33.3	22.7**	40.9	39.6

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. Chi-square tests were used to test for significance across all response categories between 1990 and 2000 within the three groups, except for mean cigarettes/day for which a t -test was used.

lard/meat fat when cooking and more frequent removal of skin from chicken. In contrast, men from the labor camps showed no improvements. In 2000, considerable proportions of men from the labor camps continued to consume red meat and fried foods frequently, use lard/meat fat in cooking, and did not take steps to reduce saturated fat intake (trim fat from red meat and/or remove skin from chicken).

Consistent with our hypotheses, there were significant decreases in alcohol intake among men (decreases in drinking in the last month for labor camp men and in binge drinking for community men), low alcohol intake among women, and continued low rates of smoking among both women and men.

Cancer Screening Practices

Our hypotheses about cancer screening practices were also confirmed. The proportion of women meeting screening guidelines for cervical and breast cancer showed significant and positive changes from 1990 to 2000 (Figure 1). The proportion of women who had a pap test and a mammogram in the past year increased significantly from 1990 to 2000. Mammography screening showed especially large gains, from 15% in 1990 to 53% in 2000. In contrast, the proportion of women and men meeting screening guidelines for colorectal cancer showed no significant changes from 1990 to 2000, with the prevalence remaining low (10–14% screened in the last year in 1990; 0–17% screened in the last year in 2000) (Figure 2).

Discussion

This study examined changes in cancer-related health behaviors, risk factors, and screening practices among Latino women and men, of predominantly Mexican origin. The study sample was drawn from a relatively homogenous Latino community and was representative of California farm workers (Villarejo *et al.* 2000). Our inclusion of those with unlisted telephone numbers in the community sample and those without telephones in the labor camp sample, and achievement of high response rates in both samples are study strengths. In addition, we were able to make a comparison between two time points, 10 years apart, in the three groups.

A number of health behaviors and screening practices showed significant improvements from 1990 to 2000. These included less frequent consumption of whole-fat milk (women from the community and men from the labor camps) and red meat (women from the community), less frequent use of lard/meat fat

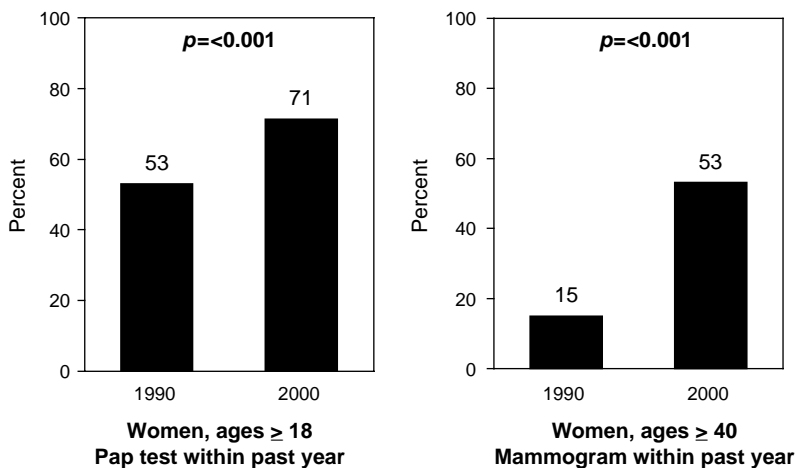


Figure 1 Met Screening Guidelines for Cervical and Breast Cancer; Change from 1990 to 2000.

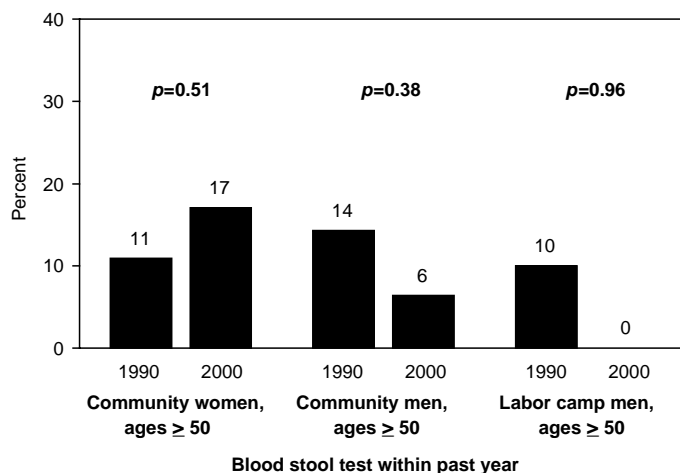


Figure 2 Met Screening Guidelines for Colorectal Cancer; Change from 1990 to 2000.

in cooking and more frequent removal of skin from chicken (women and men from the community), decreased alcohol use (men from both samples), decreased prevalence of smoking (labor camp men), and increased pap and mammogram screening (women from the community). In contrast, other risk factors and screening practices showed few improvements or worsened, including increased prevalence of obesity (all three groups), not trimming fat from red meat (men from both samples), and persistent low prevalence of colorectal cancer screening (all three groups).

We found large increases in obesity for women and men, among whom over 60% were overweight or obese by 2000. 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 (Public Health Service 1991). Although some indicators of diet quality, such as saturated fat and cholesterol intakes, have shown improvements among Latinos during the past few decades, other dietary intakes, such as fruit and vegetable consumption, still do not conform to current recommendations, especially among those with low socio-economic status (Siega-Riz & Popkin 2001; Ramirez *et al.* 2004). The increases we found in obesity are consistent with findings from other studies that show increasing rates of obesity among Mexican-American women and men (Flegal *et al.* 2002). Such large changes in obesity within a short time period are due to energy imbalance between dietary intake and physical activity, and are most likely explained by a combination of individual and environmental influences (French *et al.* 2001; Flegal *et al.* 2002; Young & Nestle 2002; Kumanyika 2004). Environments with a high density of fast food restaurants and convenience stores, heavy media marketing of high caloric foods, large portion sizes of drinks and meals, and increased mechanization of work all contribute to energy imbalance (Guendelman & Abrams 1995; Dixon *et al.*

2000). Longer residence in the USA may also serve as a risk factor by increasing exposure to the 'highest fat food nation' in the world (Schlosser 2001). Studies have documented that Mexican-American women and men born in the USA have higher fat intake, lower fiber intake, lower intake of fruits, and higher levels of obesity, than women and men born in Mexico (Otero-Sabogal *et al.* 1995; Dixon *et al.* 2000; Sundquist & Winkleby 2000).

Alcohol intake decreased among men in our sample and remained low among women, an encouraging finding given that past studies have shown higher binge drinking in Latino than non-Hispanic white men (Otero-Sabogal *et al.* 1995) and no change in heavy alcohol use among Latino men and women from a national sample from 1984 to 1995 (Caetano & Clark 1998). While the prevalence of smoking decreased among the labor camp men, this may not be representative of smoking in broader groups of Latinos. For example, the prevalence of smoking among young Latina women, aged 18–24, from a national US sample increased from 8.6% in 1990 to 17.7 in 2000 (Winkleby & Cubbin 2004). Slightly smaller increases were observed for Latino men, aged 18–24 (from 16.7% in 1990 to 21.5 in 2000).

We found large improvements in the prevalence of yearly pap and mammography screening. This is consistent with past studies that show improvements in screening in the last 10–20 years among women from lower income and ethnic minority populations (Breen & Kessler 1996; Martin *et al.* 1996). This is likely the result of health education efforts and standardization of health screening practices. Compared with the Healthy People 2000 objectives for cancer detection screening tests (Public Health Service 1991), the women in our sample almost met the goal of ever having a pap test (goal of 95% for women aged 18 and older) and exceeded the goal of having a pap test within the preceding three years (goal of 80% for women aged 18 and older) (data not shown). These changes are especially impressive given that some studies have shown that Latina women have low access to and/or use of preventive services such as pap tests and mammography screening (Hubbell *et al.* 1997; Skaer *et al.* 1998; Zambrana *et al.* 1999; De Alba *et al.* 2005).

In contrast to pap and mammography screening, colorectal screening showed no significant change in all three groups and remained infrequent, possibly because of poor understanding of the benefits of colorectal screening and low health insurance coverage. Previous studies have also documented low screening for colorectal cancer among Mexican-American populations (Pérez-Stable *et al.* 1994; Tortolero-Luna *et al.* 1995) and other Latino populations (Adams *et al.* 2004). National statistics show that 24% of non-Latino whites have had a blood stool test in the past year vs 15% of Latinos (American Cancer Society 2003). Compared with Healthy People 2000 goals (Public Health Service 1991), both women and men in our sample fell short of the goal for receiving a blood stool test within the preceding two years (Healthy People goal of 50% of people aged 50 and older). In our sample, the prevalence was 10–20% in 1990 and 0–21% in 2000 across all three groups for screening in the last two years (data not shown).

Limitations

Our findings should be interpreted within the context of several study limitations. Causal inferences cannot be made, given the cross-sectional nature of the data. Furthermore, self-reported data may have produced biased results that are more conservative in nature than those obtained using clinical measurements (e.g. BMI) or more precise objective assessments (e.g. screening rates from medical records) (McKenna *et al.* 1992; Hiatt *et al.* 1995). For example, since overweight adults tend to underestimate their weight on self-report and all adults tend to overestimate their height (Palta *et al.* 1982; Rowland 1990), the true prevalence of obesity for this study sample is likely higher than that reported. However, when we compared the data from our community sample on obesity to findings for almost 6,000 Mexican-American women and men, aged 18–64, from NHANES III, where height and weight were based on clinical measurements and the age distribution was almost identical as our sample, we found that the proportions of men and women who were obese were very similar (25% vs 24% for women, 21% vs 20% for men).

Implications

Our findings have implications for cancer control programs and highlight the need for interventions and policies, with an emphasis on weight reduction, improved screening for colorectal cancer, and healthcare services for men working in agricultural labor camps. To address the obesity epidemic in Latinos, there is a need for broad public policy changes and public health interventions that focus on dietary choices and physical activity, especially through the improvement of neighborhood environments (Taubes 1998; Must *et al.* 1999; Jeffery 2001; Mokdad *et al.* 2001; Flegal *et al.* 2002; Calle *et al.* 2003; Ewing *et al.* 2003; Saelens *et al.* 2003; Ramirez *et al.* 2004). Our results suggest that another avenue for interventions is during physician and healthcare visits, as an increasing number of Spanish-speaking Latinos in community settings interact with healthcare professionals where they can gain linguistically and culturally relevant healthcare information.

The low rates of screening for colorectal cancer require tailored outreach and interventions that address fear of cancer, cultural concerns, and lack of knowledge about cancer (Centers for Disease Control and Prevention 1999; Puschel *et al.* 2001). Even when these issues are addressed in a culturally meaningful manner, broader societal factors, such as the lack of health insurance, must be addressed to improve screening rates. Our sample had low rates of health insurance (one-third of the community sample and two-thirds of the labor camp sample were without insurance) and there were no significant improvements from 1990 to 2000 except among women from the community. These low rates of insurance coverage are similar to other Latinos in the USA, among whom almost one-third have no health insurance (National Center for Health Statistics 2003). In addition to the need for improvements in colorectal screening, there is also a need for systematic screening for breast

and cervical cancer among Latina women that can lead to earlier diagnosis and treatment that is more effective (Martin *et al.* 1996; Blackman *et al.* 1999).

Men working in agricultural labor camps need special outreach effects. In our study, they had the least access to healthcare, infrequent interaction with healthcare providers, the lowest levels of education and income, and were primarily Spanish speaking; factors that can decrease access to healthcare services and are associated with poor health behaviors, cancer screening practices, and cancer outcomes. Despite working in labor-intensive jobs in the agricultural fields, 60% were overweight or obese by 2000. This finding is similar to a 1999 study of 971 farm workers from seven California communities that found that 81% of male workers aged 20–74 were either overweight or obese (Villarejo *et al.* 2000). The disproportionate increases in obesity among labor camp men are likely influenced by a number of social and environmental factors. In Monterey County, men from labor camps are usually single, work long hours, and often live in crowded housing. This can translate into few opportunities for leisure time physical activity, inadequate cooking facilities, and frequent consumption of convenient, low-cost fast food.

Despite the remaining barriers to risk reduction and screening practices, demographic changes in the Latino population, international cooperation, and new scientific knowledge about mechanisms underlying behavior change have created opportunities for further improvements in cancer prevention and control. These changes include the increasing stability of the Latino population (80% of the community sample and almost 50% of the labor camp sample had lived in the USA for 10 years or more) that enhances successful outreach and intervention programs. In addition, there are opportunities for cooperation across nations, given that our economies are increasingly interrelated. Viewing cancer control in Latinos as a bi-national issue will allow health education and screening programs to reach women and men living in Mexico who come to the USA to work and allow cancer control to be coordinated and addressed in a comprehensive manner. Finally, there are opportunities to change environmental influences that impact cancer-related behaviors and risk factors given our new understanding of relationships between neighborhood factors and health (Macintyre *et al.* 2002; Kawachi & Berkman 2003; Winkleby & Cubbin 2003; Chuang *et al.* 2005; Pollack *et al.* 2005).

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