

- Service, Office of the Assistant Secretary for Health and Surgeon General, Washington, DC, July 1979, pp. 1-5.
2. Breslow, L.: The potential for health promotion. *In Handbook of health, health care, and the health profession*, edited by D. Mechanic. Free Press, New York, NY, 1983, pp. 50-66.
 3. Fries, J. F.: Aging, natural death, and the compression of morbidity. *N Engl J Med* 303: 130-135, 1980, July 17, 1980.
 4. Becker, M. H., and Maiman, L. A.: Models of health-related behavior. *In Handbook of health, health care, and the health professions*, edited by D. Mechanic. Free Press, New York, NY, 1983, pp. 539-568.
 5. U.S. Census, Pennsylvania counties, 1980 census data atlas. Pennsylvania State Data Center, Institute of State and Regional Affairs, The Pennsylvania State University, Capitol Campus, Middletown, PA, 1983.

Cancer Mortality Among Mexican Immigrants in the United States

IRA ROSENWAIKE, MA

Mr. Rosenwaike is Research Specialist at the University of Pennsylvania's Graduate School of Social Work. Tearsheet requests should be addressed to him at the university, 3701 Locust Walk, Philadelphia, PA 19104.

This study was supported by grant No. HD 20089 from the National Institute of Child Health and Human Development.

Synopsis

In 1980 there were more than 2 million Mexican-born immigrants living in the United States. Mortality statistics for 1979-81 indicate that the standardized mortality ratio for cancer among Mexican immigrants is 72 percent of that among

all white males and 77 percent of that among all white females. The age-adjusted death rates of the Mexican-born population for cancers of the lung, colon, rectum, bladder, and breast are significantly lower: less than 60 percent of those for the entire U.S. white population. Excessive levels of cancer of the stomach, liver, and cervix occur among Mexican-born U.S. residents; age-adjusted rate for these sites exceed the rates among the total U.S. white population by more than 75 percent

These data, based on U.S. diagnostic practices confirm that broad differences—twofold, for some cancer sites—exist between the cancer rates among immigrants from Mexico and other whites in the United States. The close correspondence between the mortality data presented in this study and comparable incidence data from another study indicates that differential survival does not explain the differences in cancer mortality among Mexican immigrants.

STUDIES OF CANCER MORTALITY among immigrant populations are useful as a first step in assessing the relative importance of environmental differences in carcinogenic exposure or genetic differences in susceptibility (1). The Mexican-born population in the United States, currently the largest single immigrant group in the nation, is suitable for such a study because Mexican Americans (native and foreign-born) occupy a genetically and environmentally distinct position in the population (2). Furthermore, only a few studies have examined the unusual patterns of cancer incidence and mortality of this population (1-4).

The most recent and extensive analysis of cancer mortality among the foreign-born in the United States is that of Lilienfeld and coworkers, who reviewed the mortality experience for the period 1959-61 among immigrants from 16 countries (1).

The pattern for Mexican immigrants was exceptional. Among all other groups—natives of 11 European countries and Canada as well as U.S. native whites—age-adjusted rates for all cancer among males were at least 25 percent higher than among females. Among persons born in Mexico, however, females had higher age-adjusted cancer mortality than males.

Mexican-born males had lower age-adjusted death rates than those of U.S. native whites for a majority of cancer sites, including lung cancer, the site with the highest mortality rate. Furthermore, the mortality of Mexican-born males ranked lowest of the populations from 16 countries not only for cancers of the intestines, rectum, bladder, and prostate but also for cancers of all sites combined. Compared with U.S. native white females, Mexican-born females had significantly higher age-

Cancer Mortality Among Mexican Immigrants in the United States

adjusted cancer mortality from all sites combined but unusually low mortality for several specific sites. Mexican-born females, like the males, ranked lowest of the 16 groups for cancers of the intestines and rectum. The Mexican-born females also had the lowest rates of breast cancer and ovarian cancer. Conversely, death rates for liver cancer were higher among Mexican males and females than among any other nativity group. Mexican-born females also had the highest rates for cancers of the pancreas and cervix. Deaths due to stomach cancer were significantly higher among Mexican-born males and females than among U.S.-born whites. Mexican-born males had significantly lower mortality due to lung cancer than their U.S.-born counterparts, whereas the rate for Mexican-born females was significantly higher (1).

The cancer mortality experience of Mexican-born residents of the United States warrants reexamination because of that population's unusual cancer profile and—perhaps of greater pertinence—its recent spectacular growth. Between 1960 and 1980, the Mexican-born population living in the United States more than tripled, climbing from 576,000 to 2,199,000 (5). In 1960 Mexican-born immigrants were the seventh largest foreign-born group; by 1980 they ranked first by a wide margin. More than three-fifths of the Mexican-born population in the United States in 1980 were less than 35 years old, reflecting the youthfulness of the large immigrant influx. The Mexican-born population ages 35 years and older, the age group at greatest risk of cancer, numbered 802,080. Of that number, 73.4 percent had immigrated to the United States in 1969 or earlier and 47.3 percent in 1959 or earlier. Among elderly Mexican-born persons ages 65 years and older, fully 84.0 percent had resided in the United States at least 20 years (according to unpublished 1980 census data provided by the Bureau of the Census).

Mexican-born immigrants have substantially lower incomes than other immigrants or the U.S.-born population. In 1979 the median income of families with a Mexican-born head was \$13,397, some 33 percent below the level of all U.S. families (\$19,917) (6). A recent examination of acculturation among Mexican Americans (immigrant and native) found that they are becoming an increasingly heterogeneous population, both socioeconomically and culturally. The majority, however, are "located in the lower socioeconomic strata and have experienced low or intermediate levels of acculturation into mainstream (non-Hispanic White) American society" (7).

In view of the major population growth mentioned and the substantial changes in cancer risk (for example, increased lung cancer mortality) that have occurred in the United States since 1960, it is important to ascertain what changes have taken place in the mortality experience of the Mexican immigrant population.

Materials and Methods

The sources of data used in this study are official mortality and population statistics by birthplace from the National Center for Health Statistics (NCHS) and the Bureau of the Census. Cancer death statistics were prepared from public-use mortality data tapes released by NCHS for the 3-year period 1979-81. Deaths of Mexican-born residents of the United States were classified by age, sex, and cause of death. The classification of cancer deaths by site was in accord with the ninth revision of the International Classification of Diseases (8).

The total number of Mexican-born residents of the United States who died from cancer during the period 1979-81 was 6,401 (3,398 males and 3,003 females); a large majority of all decedents were residents of California (3,047) or Texas (2,124). As with other vital information about the deceased, place of birth and place of residence is provided by the next of kin or a knowledgeable surrogate. The 3-year period centers on the 1980 census, which provides data used for computing rates. Census data on persons less than 65 years old who were born in Mexico were obtained from unpublished statistics prepared by the Bureau of the Census of 1980 populations by 5-year age groups and sex. For persons ages 65 years and older who were born in Mexico, published figures for two age groups (65-79 years, 80 years and older) were available (9). Estimated distributions of age and sex for 5-year age groups were derived on the basis of data from the Public Use Microdata 5 percent sample (10).

All age-, sex-, and nativity group-specific death rates were computed based on 3-year averages of deaths and expressed per 100,000 population. The age-adjusted death rates were computed by the direct standardization method, with the total population of the United States in 1980 as the standard.

Results

Age-adjusted mortality rates by sex for selected sites of cancer for Mexican-born persons living in

Table 1. Age-adjusted cancer mortality rates¹ per 100,000 population, by sex and cancer site, Mexican-born persons and all whites, United States, 1979-81

Cancer site	Males			Females		
	Mexican born	All whites	Standardized mortality ratio ²	Mexican born	All whites	Standardized mortality ratio ²
Esophagus	4.4	5.3	0.83	1.5	1.5	1.00
Stomach	15.0	9.1	1.65	7.6	4.4	1.73
Colon	10.9	24.4	0.45	7.9	18.5	0.43
Rectum	3.5	5.6	0.62	1.8	3.3	0.54
Liver	6.1	3.4	1.79	4.4	1.8	2.44
Pancreas	9.7	12.3	0.79	9.3	8.2	1.13
Lung	45.2	81.8	0.55	15.0	23.8	0.63
Breast (female) .....	...	...	...	17.7	30.4	0.58
Cervix uteri .....	...	...	...	7.7	3.6	2.14
Other uterus .....	...	...	...	3.9	4.6	0.85
Ovary .....	...	...	...	6.5	9.4	0.69
Prostate	20.8	25.9	0.80	...	...	...
Bladder	4.0	8.3	0.48	0.8	2.4	0.33
Leukemia	7.8	10.3	0.76	4.8	6.0	0.80
Total, all sites ³	173.1	248.0	0.70	126.7	156.0	0.81

¹Age-adjusted rates include only deaths at ages 5 years and older and use the age distribution of the United States population in 1980 as the standard.
²Ratios are computed by dividing the age-adjusted death rate of the

Mexican-born population by the age-adjusted rate of the white population for the selected cause-of-death category.
³Includes sites not listed in table.

the United States and for the total white U.S. population are shown in table 1. Standardized mortality ratios also are shown. The only major exceptions to the general pattern of lower cancer mortality among the Mexican-born residents were (a) substantially higher mortality rates for Mexican-born males and females from stomach and liver cancers and (b) a mortality rate from cancer of the cervix that was twice that for U.S. white females.

Mexican-born males had lower age-adjusted mortality rates for the five leading cancers among U.S. males—lung, prostate, colon, pancreas, and leukemia—than those of the general white population. Death rates among Mexican females for the three major cancer sites among U.S. females—breast, lung, and colon—were approximately half those among other white females. For cancers of all sites, Mexican-born males had an age-adjusted death rate of 173.1 per 100,000 population compared with a rate of 248.0 among all U.S. white males. The corresponding rates among females were 126.7 and 156.0.

From the above comparisons, it appears that there has been a marked improvement in relative mortality among Mexican-born males and more so among Mexican-born females since the last set of national statistics was available (1959-61). To establish the origin of this improvement, an examination of the change by site is desirable. Accord-

ingly, the standardized mortality ratios cited have been compared with similar ratios derived from the published data for 1959-61 (table 2). The comparisons are approximate for two reasons: the 1959-61 base population group comprised U.S. native whites, whereas the 1979-81 base population group comprised all U.S. whites; different populations were used as the standard for age adjustment. Although only of rough comparability across time, within each particular period the relative mortality figures may be viewed as the most appropriately derived, given the data sets available.

Table 2 indicates that among Mexicans those sites that had the lowest cancer ratios in 1959-61 also exhibited markedly low ratios in 1979-81. Those sites were colorectal, prostate, bladder, breast, and ovarian cancer, and leukemia. Other cancer sites—liver, stomach, and cervix—continued to have higher mortality ratios among Mexicans, although ratios for those sites—except for cancer of the cervix—fell during the period 1979-81. The most dramatic changes noted were the declines in the ratios for cancers of the lung, prostate, and esophagus. For cancers of the lung and esophagus, the mortality ratios dropped among males and even more sharply among females. Whereas in 1959-61 the cancer ratios for these sites among females were roughly twice the ratios among males, in 1979-81 there was little difference between the sexes. Thus for both sexes in 1979-81,

Table 2. Standardized mortality ratios¹ for Mexican-born persons for cancer, by site and sex, United States, 1959-61 and 1979-81

Cancer site	Males		Females	
	1959-61	1979-81	1959-61	1979-81
Esophagus	1.17	0.83	1.86	1.00
Stomach	1.95	1.65	2.52	1.73
Colon	² 0.42	0.45	² 0.50	0.43
Rectum	0.61	0.62	0.47	0.54
Liver	2.25	1.79	3.89	2.44
Pancreas	1.07	0.79	1.89	1.13
Lung	0.78	0.55	1.67	0.63
Breast (female)			0.60	0.58
Cervix uteri			1.91	2.14
Other uterus			1.35	0.85
Ovary			0.90	0.69
Prostate	0.60	0.80		
Bladder	0.51	0.48	0.67	0.33
Leukemia	0.77	0.76	0.78	0.80
Total, all sites ³	0.88	0.70	1.13	0.81

¹The 1959-61 ratios are computed by dividing the age-adjusted death rates of the Mexican-born population by the age-adjusted rate of the native white population. Rates appear in reference 7. The standard population is that of the U.S. in 1950. Mortality ratios for 1979-81 have rates for the total white population as denominators and the standard population is that of the U.S. in 1980.

²Includes small intestine.

³Includes sites not listed in table.

the death rate for lung cancer among Mexican-born residents of the United States was about half that among other white residents. In 1959-61, the death rate for lung cancer among Mexican-born females markedly exceeded that among U.S.-native white females (1).

Discussion

In studies concerning the role of environmental factors in the development of cancer, information on immigrant populations is important because their diet and lifestyle may differ from those of the host population. However, the interpretation of apparent differences among immigrant groups is complicated by factors such as variation in the quality of medical care and death certification, selective migration of healthy persons, and socioeconomic differences.

The rapid growth, recently, of the Mexican-origin population, as well as of other Hispanics in the United States, has stimulated interest in securing information on mortality patterns of all persons of Hispanic origin, both foreign- and native-born. Between 1978 and 1981, in response to a request by NCHS, 22 States included a Hispanic identifier on their death certificates. However, difficulties in comparability of the numerator (number of Hispanic decedents) and the

denominator (census populations) were substantial in some States.

Incomplete reporting has been an equally, if not more, serious problem. After a review of the completeness of reporting Hispanic origin, NCHS concluded that the data were not sufficiently complete to warrant analysis of mortality statistics (11).

Problems associated with incomplete reporting on the death certificate were largely absent from the more objective item, birthplace—an item on the death record of all 50 States and the District of Columbia. State or country of birth is one of the most completely reported items on the death record. In 1980, for example, only 0.5 percent of all death records nationwide lacked such information (12).

In this study and the study by Lilienfeld and colleagues of mortality from cancer among Mexican-born residents of the United States (1), death rates for all cancer sites combined among males were significantly lower than among the comparison population. Age-adjusted mortality rates among Mexican-born males were significantly higher than rates for U.S. whites for cancers of the liver and stomach in studies of both the 1959-61 and the 1979-81 periods. For these same periods, Mexican-born females also experienced high rates of mortality from liver and stomach cancers as well as cervical cancer. Cancer of the stomach, which is likely to have a dietary component to its etiology, occurs at high rates among many Spanish-speaking populations, including persons in Colombia, Puerto Rico, and New Mexico. In addition, rates are high among Japanese both in their country of origin and in the United States. Conversely, cancers of the colon and rectum, also believed to be related to diet (one rich in meat and animal proteins), tend to occur at lower rates among Japanese- and Spanish-speaking societies (13).

According to some studies, cancers of the cervix and liver are among neoplasms that may be caused in part by microorganisms. These cancers tend to occur more frequently among some migrants and in their homelands than among the U.S. white population (13,14). The Mexican pattern of high mortality from selected sites thus clearly corresponds to the pattern observed for other groups.

The low rates among Mexicans for cancers of the prostate, ovary, and breast, as well as colorectal cancer, also have been observed among other immigrant groups, such as Puerto Ricans (15), Chinese, and Japanese (13,14). Breast cancer

risks have been linked to reproductive history by numerous studies (16). Dietary components, especially fats, also have been proposed as risk factors (17).

Certain factors need to be kept in mind when considering the apparent trends in cancer mortality for the Mexican-born population over two decades (table 2): First, the changes reflect differences in rates in cohorts of people who, to a large extent, migrated at two different periods. Second, rates in these two groups are compared with prevailing rates in the United States at two different times. The standardized mortality ratios (SMRs) for the immigrants thus reflect changes in rates in Mexico, in the immigrants themselves, and in the U.S. white population. Small shifts, in particular, must be viewed with caution.

The unusual shift among Mexican-born females from relatively high mortality from cancers of the lung, esophagus, and pancreas to average or markedly below average levels does not appear to be an artifact of the data sources but rather a real effect that has been reported by several investigators (18-21). Based on studies of Mexican-born women in California (19) and Texas (20), researchers observed that lung cancer mortality was particularly high among certain birth cohorts, especially those of women born before 1900. This finding was attributed to heavy cigarette smoking as well as indoor cooking over open fires. Younger cohorts of women did not have excessively high rates. The sharp relative reductions in mortality from cancers of the esophagus and pancreas among Mexican-born women might possibly have a common etiology with the concomitant relative decline in lung cancer. Cigarette smoking is known to greatly increase the risk of cancers of the esophagus and pancreas (22).

Changes in cigarette smoking patterns may also explain the considerable improvement in cancer-related mortality among Mexican-born males relative to that of U.S. whites and the very substantial improvement among Mexican-born females. During the 20-year period 1960-80, the 15 percent increase in age-adjusted cancer mortality among white males was due entirely to sharply rising lung cancer mortality. Among white females, all cancer mortality remained almost unchanged, but lung cancer mortality increased threefold and more (23). The major explanation for these patterns has been the historical increases in the prevalence of cigarette smoking.

It is likely that parallel rates of increase have not occurred among the Mexican-born residents;

'In studies concerning the role of environmental factors in the development of cancer, information on immigrant populations is important because their diet and lifestyle may differ from those of the host population.'

thus, they have been at relatively low risk for lung cancer. More data are becoming available that describe the cigarette smoking patterns of Mexican Americans. For the Hispanic Health and Nutrition Examination Survey (HANES), about 3,300 Mexican Americans ages 20-74 years in the Southwest were interviewed in 1982 and 1983. Rates of cigarette smoking were only slightly higher among Mexican Americans than among non-Hispanic white males (42.5 percent versus 39.9 percent). Mexican American males, however, smoked only about half the number of cigarettes as did other white males. Mexican American females were less likely to smoke and more likely to smoke fewer cigarettes than other white females (24). The Hispanic HANES data are for all Mexican Americans—those born in Mexico and in the United States.

The present findings, which are based on mortality statistics, generally closely correspond to cancer incidence data available for Mexican Americans (native and foreign-born) collected from hospital records in Los Angeles County for 1972-74 (2). The similarities are noteworthy considering that different periods and areas are compared (Los Angeles County has about one-third of all Mexican-born residents of the United States), and different standardization and base populations are compared. Further, differential rates of survival between Mexicans and other whites are possible. For the major cancer sites among males, the standard incidence ratios for Mexican immigrants in Los Angeles County compared with other whites (SMRs from table 1 in parenthesis) were as follows: all cancers 0.62 (0.70), lung 0.41 (0.55), prostate 0.69 (0.80), stomach 2.14 (1.65), colon 0.43 (0.45), and pancreas 0.73 (0.79). For Mexican immigrant females, standard incidence ratios for major sites were these: all cancers 0.69 (0.81), breast 0.40 (0.58), lung 0.59 (0.63), pancreas 1.07 (1.13), colon 0.35 (0.43), and cervix 2.92 (2.14).

'The low risks among Mexicans for cancers of the prostate, ovary, and breast, as well as colorectal cancer, also have been observed among other immigrant groups, such as Puerto Ricans, Chinese, and Japanese.'

The close correspondence between the two independent sets of figures provides evidence that the major features of the mortality patterns are not artifactual. The Los Angeles County incidence data also indicate that the greatest deficit in cancer mortality occurs among immigrants. The rates for Mexican Americans born in the United States were approximately midway between those for persons born in Mexico and other whites (2).

For some cancer sites, high mortality among selected population groups frequently is assumed to reflect the effects of delay in seeking treatment (25); this may be the case regarding cervical cancer. Notably high mortality from cervical cancer was observed among Mexican immigrant women for both time periods examined. A recent study in a Hispanic population finds support for the view of infectious and venereal transmission of cervical cancer (26).

One study investigating breast cancer patients in San Antonio suggests that incidence among Hispanics may be lower (compared with non-Hispanics) than the relative measure based on mortality data suggest because the prognosis among the former group appears to be poorer due to a more advanced stage at presentation (27). However, another study of breast cancer patients in Houston found no difference between Mexican Americans and other females regarding delay in seeking treatment or survival rates (28).

The remarkably low cancer mortality among persons of Mexican origin compared with non-Hispanics has received deserved attention. As Samet and colleagues have observed (29), health education should be directed at maintaining the low risk status of the group. This endeavor appears to be warranted; Marcus and Crane suggest that the lower rates of lung cancer reflect a period when Hispanics in the Southwest smoked less frequently, while recent information indicates that they are now more likely to be smokers (30).

Thus, mortality from cigarette-linked causes, such as lung cancer, may increase in the future.

Markides and Coreil also point out that as the Mexican-origin population becomes more acculturated, "we might anticipate increases in certain risk factors, including higher rates of smoking, drinking, and the adoption of a diet more conducive to . . . certain cancers" (25). If a less acculturated lifestyle contributes to the lowering of the risk of cancer among Mexican immigrants relative to other whites (as exhibited in table 2), specific identification of what factors account for the differences is needed (25). Researchers are hopeful that in the next few years review of the data from the Hispanic HANES will provide much insight regarding these factors.

References

1. Lilenfeld, A. M., Levin, M. L., and Kessler, I. I.: Cancer in the United States. Harvard University Press, Cambridge, 1972.
2. Menck, H. R.: Cancer incidence in the Mexican American. *In* Epidemiology and cancer registries in the Pacific Basin. NCI Monogr 47, Bethesda, MD, 1977, pp. 103-106.
3. Menck, H. R., et al.: Cancer incidence in the Mexican-Americans. *JNCI* 55: 531-536 (1975).
4. Haenszel, W.: Cancer mortality among the foreign-born in the United States. *JNCI* 26: 37-132 (1961).
5. U.S. Bureau of the Census: 1980 census of population: general social and economic characteristics. U.S. summary, PC80-1-C1, U.S. Government Printing Office, Washington, DC, 1983.
6. Fernandez, E. W., and Cresce, A. R.: Social and economic status of the Hispanic foreign-born: the assimilation experience. Presented at the annual meeting of the Population Association of America, Boston, Mar. 28-30, 1985.
7. Hazuda, H. P.: Differences in socioeconomic status and acculturation among Mexican Americans and risk of cardiovascular disease. *In* Report of the Secretary's Task Force on Black and Minority Health. U.S. Department of Health and Human Services, Vol. 4, pt. 2. U.S. Government Printing Office, Washington, DC, 1986, pp. 366-390.
8. International classification of diseases (ninth revision). Manual of the international statistical classification of diseases, injuries, and causes of death. World Health Organization, Geneva, 1977.
9. U.S. Bureau of the Census: 1980 census of population. PC 80-2-4C. Marital characteristics. U.S. Government Printing Office, Washington, DC, 1985.
10. U.S. Bureau of the Census: Census of population and housing, 1980: public-use microdata samples technical documentation. U.S. Government Printing Office, Washington, DC, 1983.
11. Trevino, F. M.: Vital and health statistics for the US Hispanic population. *Am J Public Health* 72: 979-982 (1982).
12. Kestenbaum, B.: Mortality by nativity. *Demography* 23: 87-90 (1986).
13. Thomas, D. B.: Epidemiologic studies of cancer in minor-

- ity groups in the western United States. *In* Second symposium on epidemiology and cancer registries in the Pacific Basin. NCI Monogr 53, Bethesda, MD, 1979, pp. 103-113.
14. King, H., et al.: Patterns of site-specific displacement in cancer mortality among migrants: the Chinese in the United States. *Am J Public Health* 75: 237-242 (1985).
 15. Rosenwaike, I.: Cancer mortality among Puerto Rican-born residents in New York City. *Am J Epidemiol* 119: 177-185 (1984).
 16. MacMahon, B., Cole, P., and Brown, J.: Etiology of human breast cancer: a review. *JNCI* 50: 21-42 (1973).
 17. Pike, M. C., and Ross, R. K.: Breast cancer. *Br J Cancer* 40: 351-354 (1984).
 18. Buechley, R., et al.: Excess lung cancer mortality rates among Mexican women in California. *Cancer* 10: 63-66 (1957).
 19. Buell, P. E., Mendez, W. M., and Dunn, J. E., Jr.: Cancer of the lung among Mexican immigrant women in California. *Cancer* 22:186-192 (1968).
 20. Lee, E. S., Roberts, R. E., and Labarthe, D. R.: Excess and deficit lung cancer mortality in three ethnic groups in Texas. *Cancer* 38: 2551-2556 (1976).
 21. Holck, S. E., et al.: Lung cancer mortality and smoking habits: Mexican-American women. *Am J Public Health* 72: 38-42 (1982).
 22. Hammond, E. C.: Tobacco. *In* *Persons at high risk of cancer*, edited by J. F. Fraumeni, Jr. Academic Press, New York, 1975, pp. 131-137.
 23. National Center for Health Statistics: *Health, United States, 1984*. U.S. Government Printing Office, Washington, DC, 1984.
 24. Haynes, S. G., et al.: Cigarette smoking patterns among Mexican-Americans: HHANES, Southwest United States, 1983-84. Paper presented at annual meeting Am Public Health Association, Washington, DC, Nov. 19, 1985.
 25. Markides, K. S., and Coreil, J.: The health of Hispanics in the southwestern United States: an epidemiologic paradox. *Public Health Rep* 101: 253-265 (1986).
 26. Zunzunegui, M. V., King, M. C., Coria, C. F., and Charlet, J.: Male influences on cervical cancer risk. *Am J Epidemiol* 123: 302-307 (1986).
 27. Daly, M. B., Clark, G. M., and McGuire, W. L.: Breast cancer prognosis in a mixed Caucasian-Hispanic population. *JNCI* 74: 753-757 (1985).
 28. Vernon, S. W., et al.: Ethnicity, survival and delay in seeking treatment for symptoms of breast cancer. *Cancer* 55: 1563-1571 (1985).
 29. Samet, J. M., et al.: Respiratory disease mortality in New Mexico's American Indians and Hispanics. *Am J Public Health* 70: 492-497 (1980).
 30. Marcus, A. C., and Crane, L. A.: Smoking behavior among US Latinos: an emerging challenge for public health. *Am J Public Health* 75: 169-172 (1985).