

# ETHNICITY AND CANCER PREVENTION IN A TRI-ETHNIC URBAN COMMUNITY

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**A pilot study of knowledge and behavior regarding primary cancer prevention was conducted in a tri-ethnic urban community. Knowledge of smoking and dietary risk factors was substantial, but awareness of cancer safeguards involving reduced sun exposure and mouth and proctological examinations was low. One of five respondents had taken measures to prevent cancer, and these persons tended to rate their own risk higher than respondents who made no life-style changes. Self-motivated behavior change focused on avoidance of cancer-promoting food. Blacks differed from whites and Mexican-Americans in awareness of cancer cause and prevention, particularly regarding dietary factors and behavior modification. The findings have implications for the design of cancer control measures in multiethnic communities.**

Research on public knowledge about cancer has focused primarily on the recognition of early warning signals and disposition toward screening and early detection.<sup>1-5</sup> Popular conceptions and practices regarding primary prevention other than smoking behavior have received very little attention. Ethnic differences in cancer prevention are even less understood, yet blacks and other minorities are at greater risk for many types of cancer. This paper presents the findings of a study of ethnic awareness and naturally occurring behavior

change to reduce cancer risk, with special attention to knowledge of recommended safeguards<sup>6</sup> and dietary factors in cancer prevention.<sup>7</sup>

Educational measures to reduce cancer risk must take into consideration divergent epidemiological trends as well as existing knowledge, behavior, and sources of information for defined audiences.<sup>8</sup> Overall, blacks have higher cancer incidence and mortality rates than whites, and for the most common sites Hispanics' rates are lower than those of either group. Whereas incidence among whites for most cancer sites has declined over the past several decades, it has increased about 8 percent among blacks. Higher rates of cancer of the lung, colon-rectum, prostate, and esophagus, which affect men primarily, account for most of the increase among blacks. Although incidence and mortality from breast and cervical cancers are declining among both black and white women, the decrease has been much slower for black women.<sup>9-11</sup> Hispanics in Texas and New Mexico have a higher incidence of stomach, liver, gallbladder and cervical cancers, but lower rates of the more numerous lung, breast, and colon cancers when compared with blacks and whites.<sup>12-14</sup>

Most of the rate differences among ethnic groups may be attributable to behavioral, social, and environmental factors rather than biological or genetic characteristics.<sup>15-17</sup> In particular, contrasting dietary patterns are hypothesized to contribute to rate differentials among blacks and Hispanics.<sup>10,18</sup> Mortality differences, on the other hand, have been linked to delayed diagnosis<sup>19</sup> (and personal communication, J. McMurray, March 1981).

There are few published studies of beliefs and behavior among ethnic groups regarding cancer prevention; the authors know of no such study done with Hispanics. Surveys of cancer knowl-

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edge among blacks indicate they are generally less informed about cancer, more pessimistic about early detection, and less aware of warning signals than whites.<sup>6,20</sup> The most important sources of cancer information for the general population are mass communications,<sup>21</sup> yet ethnic and intra-ethnic variation in primary information channels has been reported.<sup>20,22</sup>

Knowledge of cancer etiology and preventive actions has not been investigated systematically for the general public or subcultural groups. Moreover, the area of voluntary cancer risk reduction (preventive actions taken independent of directed intervention) remains virtually unexplored. The study reported here addresses these issues and suggests promising directions for further research.

## METHODS

A household survey of 64 residents of Galveston, Texas, was conducted during the winter of 1982. The sample was stratified by ethnicity to include 20 blacks, 20 Mexican-Americans, and 24 whites. Households were selected from census tracts with at least 60 percent of residents from each group, and with a median income between \$10,000 and \$20,000. Because the sample size for each subgroup was too small to stratify by income, the sampling strategy was to maximize participants with middle-range income. Blocks within selected tracts were randomly chosen and all households were contacted. One adult per household was interviewed.

Sample characteristics were as follows: mean age was 43 years; average years of schooling, 12; about two thirds of the participants were women; Protestants and Catholics were equally represented; slightly less than one half were currently married; and the distribution for yearly family income was 44 percent between \$10,000 and \$20,000, 31 percent less than \$10,000, and 25 percent greater than \$20,000.

Ethnic subgroups were proportionately represented by sex, age, and marital status. Mean edu-

cational level for Anglos was slightly higher than for Hispanics, but education for blacks did not differ statistically from that of the other groups. Mean income for blacks, however, was lower than that of Mexican-Americans and whites. Religious affiliation among Anglos was divided equally between Protestant and Catholic; almost all blacks were Protestant, and almost all Mexican-Americans were Catholic.

A 45-item interviewer-administered questionnaire was developed to ascertain sources of cancer information, knowledge of cancer cause and prevention, awareness of dietary factors in cancer, perceived cancer risk for self, and action taken to reduce one's risk of cancer. The interviews were conducted by persons of matched ethnic identity and native language. Data were analyzed using descriptive statistics and two-way analyses of variance.

## RESULTS

Across all groups (51 percent of total sample), television was listed as the most important source of cancer information. About half of all respondents (43 percent white, 50 percent black, 60 percent Mexican-American) cited this medium as the primary information source. Secondary sources of cancer information, however, differed by ethnic group. For whites, these were magazines (17 percent) and family members (13 percent); for blacks, physicians (22 percent), and pamphlets (11 percent); and for Mexican-Americans, magazines (15 percent) and radio (10 percent). Interestingly, for all groups, family (5 percent) and friends (10 percent) also constituted important secondary sources of information about diet and cancer.

Knowledge of cancer cause and prevention was elicited by open-ended and structured questions (exact phrasing noted in Tables 1 and 2). Free responses were grouped inductively into categories based on factors discussed in the literature.

Table 1 indicates that smoking was the most frequently mentioned cause of cancer, followed by diet and food additives, pollution, infection, injury, and alcohol. Other factors including repro-

**TABLE 1. RECOGNITION OF CARCINOGENIC FACTORS BY ETHNIC GROUP AND TOTAL SAMPLE\***

<b>Response Category</b>	<b>White (n = 24) No. (%)</b>	<b>Black (n = 20) No. (%)</b>	<b>Mexican- American (n = 20) No. (%)</b>	<b>Total Sample (n = 64) No. (%)</b>
Smoking	17 (71)	17 (85)	15 (75)	50 (78)
Diet	8 (33)	8 (40)	8 (40)	23 (36)
Food additives	5 (21)	5 (25)	8 (40)	20 (31)
Pollution	7 (29)	1 (5)	5 (25)	13 (20)
Infection/injury	2 (8)	7 (35)	4 (20)	13 (20)
Alcohol	5 (21)	4 (20)	3 (15)	9 (14)
Industrial products	3 (12)	0 (0)	5 (25)	6 (9)
Drugs, cosmetics, medical procedures	2 (8)	2 (10)	2 (10)	6 (9)
Reproductive behavior	4 (19)	0 (0)	0 (0)	5 (8)
Radiation/sunlight	1 (4)	1 (5)	2 (10)	5 (8)
Stress	2 (8)	1 (5)	0 (0)	3 (5)
Genetics/heredity	0 (0)	1 (5)	2 (10)	3 (5)

\*Responses to "What are some of the things you have heard that may lead to cancer?"

**TABLE 2. AWARENESS OF CANCER PREVENTION ACTIVITIES BY ETHNIC GROUP AND TOTAL SAMPLE\***

<b>Response Category</b>	<b>White (n = 24) No. (%)</b>	<b>Black (n = 20) No. (%)</b>	<b>Mexican- American (n = 20) No. (%)</b>	<b>Total Sample (n = 64) No. (%)</b>
Smoking avoidance	14 (58)	6 (30)	4 (20)	23 (37)
Dietary measures	5 (21)	0 (0)	2 (10)	8 (12)
Stress reduction	2 (8)	2 (10)	0 (0)	4 (6)
Information	1 (5)	1 (5)	1 (5)	3 (4)
Alcohol control	1 (5)	0 (0)	1 (5)	2 (3)
Industrial exposure	2 (8)	0 (0)	0 (0)	2 (3)
Exercise	0 (0)	0 (0)	2 (10)	2 (3)
Reproductive behavior	1 (5)	0 (0)	0 (0)	1 (2)
Other primary prevention	4 (16)	3 (15)	2 (10)	8 (12)
Secondary prevention (checkups, screening, self-examination)	9 (37)	3 (15)	5 (25)	18 (28)

\*Responses to "Do you know of any things a person can do to help avoid getting cancer?"

**TABLE 3. AWARENESS OF PROMOTER FOODS BY ETHNIC GROUP AND TOTAL SAMPLE\***

<b>Response Category</b>	<b>White (n = 24) No. (%)</b>	<b>Black (n = 20) No. (%)</b>	<b>Mexican- American (n = 20) No. (%)</b>	<b>Total Sample (n = 64) No. (%)</b>
Saccharine products	10 (42)	3 (15)	12 (60)	26 (41)
Food additives	17 (71)	2 (10)	3 (15)	22 (34)
Meat, fish, eggs	4 (17)	6 (30)	2 (10)	12 (19)
Caffeine	1 (4)	1 (5)	1 (5)	3 (5)
Agricultural chemicals	1 (4)	1 (5)	0 (0)	2 (3)
Fat/cholesterol	0 (0)	0 (0)	2 (10)	2 (3)
Other	6 (25)	3 (15)	2 (10)	10 (16)

\*Responses to "Do you know of any foods or substances in foods that have been linked to cancer?"

ductive behavior, chemicals and industrial products, radiation and sunlight, genetics and heredity, drugs, medical procedures, and stress were reported by less than 10 percent of respondents. Behavioral and life-style factors made up a much larger share of responses than environmental or hereditary factors, apparently indicating greater salience for life-style factors in respondents' awareness of cancer etiology.

Knowledge of cancer prevention activities was similarly weighed toward behavioral and life-style factors (Table 2). Response categories mentioned most frequently were smoking avoidance, dietary measures, and stress reduction, in addition to secondary prevention activities such as checkups and self-examinations. Of the seven cancer safeguards recommended by the American Cancer Society, only four were mentioned at all (don't smoke cigarettes, have a monthly breast self-examination, take a Papanicolaou test, and get a regular health checkup). Not mentioned were periodic mouth and proctological examinations and avoidance of sun overexposure.

Ethnic differences in knowledge of cancer cause and prevention (Tables 1 and 2) were consistent in that blacks gave different responses from those given by whites and Mexican-Americans.

Fewer blacks listed pollution and industrial products as promoters of cancer, and a larger percentage cited infection and injury as causes. For cancer prevention activities, no blacks reported dietary factors, and a larger proportion listed forms of stress reduction such as "not worrying."

Knowledge of dietary carcinogens and protectors (promoter and defender foods) was low for all groups. Of the promoter foods listed, saccharine products and food additives accounted for the largest share of responses (Table 3). Other dietary categories reported include meat, fish, eggs, caffeine, agricultural chemicals, fat, cholesterol, and others. Whites listed food additives most often; blacks most frequently listed meat, fish, and eggs; Mexican-Americans noted saccharine products most often. Mexican-Americans were also the only respondents to mention fat or cholesterol.

Out of the total sample only 19 persons were able to name one or more defender foods. These included fiber, vitamins, and fresh produce. Only 2 of the respondents who mentioned defender foods were black; 9 were white and 8 were Mexican-American.

Awareness of promoter and defender foods was also measured by structured responses to a list of 20 foods and ingredients thought by some to in-

**TABLE 4. PERCENTAGE OF RESPONDENTS REPORTING CHANGE IN LIFE STYLE AND DIET TO LOWER CANCER RISK**

Response Category	White (n = 24) No. (%)	Black (n = 20) No. (%)	Mexican- American (n = 20) No. (%)	Total Sample (n = 64) No. (%)
Life style change*				
Yes	5 (22)	4 (20)	5 (25)	14 (22)
No	19 (78)	16 (80)	15 (75)	50 (78)
Dietary change**				
Yes	5 (22)	2 (10)	6 (30)	13 (21)
No	19 (78)	18 (90)	14 (70)	51 (79)

\*Responses to "Have you changed your life style in any way so that you might lower your chances of getting cancer?"

\*\*Responses to "Have you changed your diet or eating habits in any way so that you might lower your chances of getting cancer?"

crease or decrease risk of various cancers. The promoters included well-publicized substances such as saccharine, nitrites, food coloring, and charcoal-broiled meat, as well as less-reported substances such as coffee, beer, and peanuts. Defenders listed were fiber and less-publicized substances such as low-cholesterol foods and cabbage. For almost all foods the majority of respondents reported no knowledge of their association with cancer. The exceptions to this were saccharine, food coloring, and artificial flavorings, of which most respondents were aware. Very few participants indicated knowledge of the defender foods (fiber, vitamins, cabbage); of those who did report awareness, half or more said these foods *caused* rather than prevented cancer.

Significant differences were found in ethnic group knowledge of the food list. Anglos had greater awareness of preservatives ( $\chi^2 = 14.35$ ,  $df = 2$ ,  $P < .008$ ) and charcoal-broiled meat ( $\chi^2 = 7.44$ ,  $df = 2$ ,  $P = .02$ ). Mexican-Americans reported greater knowledge of the coffee-cancer link ( $\chi^2 = 6.69$ ,  $df = 2$ ,  $P < .03$ ). Blacks were the only respondents who indicated awareness of the importance of cabbage, but this difference was not statistically significant.

The rate of naturally occurring behavior change for lowering cancer risk was measured by asking respondents whether they had changed their life style or diet in any way to help reduce their chances of getting cancer. For both life style and diet, one of every five respondents in all groups answered affirmatively (Table 4). No associations were found between behavior change and having had a family member with cancer or having visited a cancer patient in a hospital.

The life-style changes reported by 20 percent of the respondents included dietary modifications, smoking cessation, alcohol reduction, exercise, and regular checkups (Table 5). Specific dietary changes most commonly reported included eating fewer prepared foods; less fat, cholesterol, artificial sweeteners, and sugar; and more or less of various specific foods.

A strong although not significant association was found between perceived cancer risk for the individual and rate of preventive action taken. Persons who viewed their chances of eventually getting cancer as less than average were less likely to have taken preventive measures, as compared with persons who perceived their risk as average or greater. Although the statistical significance of

**TABLE 5. KINDS OF BEHAVIOR AND DIETARY CHANGE TO REDUCE CANCER RISK REPORTED BY TOTAL SAMPLE**

<b>Behavior Change</b>	<b>Respondents No. (%)</b>	<b>Dietary Change</b>	<b>Respondents No. (%)</b>
Dietary modification	9 (14)	Less prepared food	4 (6)
Smoking cessation	4 (6)	Lower fat, cholesterol	3 (5)
Alcohol reduction	2 (3)	Less diet soda or artificial sweetener	2 (3)
Regular checkup	2 (3)	Avoidance of sweets	2 (3)
Papanicolaou smear, breast examination	2 (3)	"Healthier" food	2 (3)
Exercise	2 (3)	Eating more of specific foods (fiber, greens, vitamins)	3 (5)
Other	3 (5)	Eating less of specific foods (milk, meats, coffee, alcohol)	5 (8)
		Weight reduction	1 (2)

this finding is low, it suggests the need to study further the influence of belief in personal susceptibility on self-motivated behavior change.

## DISCUSSION

Little information is available regarding the major sources of health information for different ethnic groups, particularly Hispanics.<sup>23</sup> The findings of the present study concerning sources of cancer information among Mexican-Americans in Galveston differ from the sources reported for general health information among Mexican-Americans in another Texas city.<sup>22</sup> In that study, physicians, television, and newspapers were identified as the major information sources, whereas in the present study these were television, magazines, and radio. These findings may be reconciled by positing that information source varies by type of health matter (ie, cancer vs general health information), by place of residence, or by socio-demographic composition of the ethnic sample. At a more general level, the findings reaffirm the need to consider ethnic background when targeting

health information to particular audiences.

Overall knowledge of cancer cause and prevention was weighed toward behavioral and life-style factors, with smoking and diet having the most salience. This pattern would seem to indicate that public awareness of potential cancer prevention is consistent with current priorities for life-style intervention to reduce cancer risk. Safeguards involving mouth and proctological examinations and reduced exposure to the sun, however, are not well known and may need emphasis in public cancer education. These findings are consistent with national surveys indicating low public awareness of and confidence in early detection of colorectal cancer, a fact partly attributable to low media coverage.<sup>24</sup>

The findings indicate substantial public awareness of foods that should be avoided (ie, promoter foods). Reduction of these foods in the diet represented most of the reported preventive measures in life style. The results suggest that there already exists a segment of the population that has taken steps to reduce cancer risk in areas targeted for public education. A more in-depth investigation of self-motivated individuals could help identify factors that predispose people to change their behavior and thus aid in the design of effective interven-

tion programs. At the same time, the findings show that awareness of etiological factors is an insufficient "cue" to preventive action for a majority of respondents, indicating that much remains to be done in the area of primary cancer prevention.

Efforts to increase awareness and motivate individuals to change may be influenced by ethnicity. Although the rate of naturally occurring behavior change was consistent across subcultural groups, knowledge of cancer prevention and actual behavior changes varied by ethnicity. Blacks contrasted most sharply with the other groups, particularly with regard to diet. This contrast suggests that dissemination of dietary guidelines for cancer prevention to predominantly black populations may require special emphases and necessitate experimentation with innovative communication avenues such as social networks, church-based programs,<sup>25</sup> and other community resources. The small sample size and overrepresentation of low-income blacks in the survey, however, preclude generalization on this point.

The findings also suggest that self-perceived risk of cancer may influence rate of voluntary behavior change. An implication of this trend is that increased awareness of direct risk may stimulate preventive action.

Given the nature and scope of the study, any conclusions suggested by the findings must be tested with a larger and more representative sample. The evidence indicates that further research in cancer prevention would do well to give adequate attention to ethnic factors.

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