Fatalistic Beliefs about Cancer Prevention and Three Prevention Behaviors

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Abstract

Background: A substantial proportion of US adults hold fatalistic beliefs about cancer prevention. Although evidence suggests that fatalistic beliefs discourage people from engaging in screening behaviors that can reduce their cancer risk, far less is known about associations between cancer fatalism and other prevention behaviors. We examined sociodemographic correlates of these beliefs and their associations with regular exercise, smoking, and fruit and vegetable consumption with a national sample of American adults.

Methods: Data were analyzed from the first wave of the Health Information National Trends Survey (HINTS 2003). HINTS used random-digit dialing to complete phone interviews with adult Americans (N = 6,369).

Results: Nearly half of respondents (47.1%) agreed that “It seems like almost everything causes cancer;” 27.0% agreed that “There’s not much people can do to lower their chances of getting cancer,” and 71.5% agreed that “There are so many recommendations about preventing cancer, it’s hard to know which ones to follow.” These beliefs were stronger in subjects who were less educated but generally weaker among both African Americans and Hispanics relative to Whites.

Conclusions: Americans who hold fatalistic beliefs about cancer prevention may be at greater risk of cancer because they are less likely to engage in various prevention behaviors. Results have notable implications for future cancer communication and education efforts. (Cancer Epidemiol Biomarkers Prev 2007;16(5):998–1003)

Introduction

It is estimated that half of all men and one third of all women will develop some type of cancer in their lifetime (1), but several behaviors reduce cancer risk. Fruit and vegetable consumption reduces the risk of cancer (2), and lower weight, influenced by diet and exercise, is associated with lower risk of cancer onset and recurrence (3, 4). Some scientists estimate that 30% of US cancer deaths are attributable to smoking (5), whereas 14% to 20% are attributable to overweight and obesity (6). Thus, a thorough understanding of the barriers to these behaviors is critical to efforts in cancer control.

Fatalism, an outlook that events are controlled by external forces and humans are powerless to influence them, has been proposed as a barrier to cancer prevention and screening behavior (7, 8), particularly among the poor (9, 10), African Americans (11, 12), and Hispanics (13, 14). Cancer fatalism has been operationalized at multiple stages of the cancer continuum, from prevention (refs. 7, 8, 12-16; e.g., “there’s nothing a person can do prevent cancer”) to screening (refs. 7, 17; e.g., “if you don’t die from this, you’ll die from that, so there’s no point in taking screening tests”) to survivorship (refs. 11, 13, 14, 17-21; e.g., “cancer is a death sentence”). Fatalistic beliefs about cancer prevention, prevalent among US adults (13, 22, 23), are characterized by pessimism, helplessness, and confusion about ways to avoid getting cancer (7, 10, 15, 24, 25).

Little is known about sociodemographic and behavioral correlates of fatalistic beliefs about cancer prevention. Fatalistic beliefs about cancer survivorship are more prevalent among Hispanic and African American populations than Whites (13, 14, 18, 21), stronger among those with lower levels of education (13, 20, 21), and associated with decreased use of cancer screening tests (13, 17, 18, 24), but far less is known about the correlates of fatalistic beliefs about cancer prevention. The most recent national survey of these beliefs, which found that half of the US population believed that “everything causes cancer” and that “there’s not much a person can do to prevent cancer,” was conducted in 1986 (23). Although more recent studies document racial/ethnic differences in fatalistic beliefs about cancer prevention (7, 12, 16) and associations with screening test use (7, 8, 14, 16), these studies are based on small samples from specified geographic locations. Other studies have found few differences in these beliefs by race/ethnicity (14), and some argue that observed associations between race/ethnicity and all types of cancer fatalism are largely attributable to differences in socioeconomic status (9, 10). Furthermore, there is no published evidence linking fatalism, at any stage of the cancer continuum, to physical activity, smoking, and fruit and vegetable consumption.

Fatalistic beliefs about cancer prevention may influence prevention behaviors by promoting a sense of external locus of control (7, 8) changing beliefs about the value of specific behaviors (24), or reducing self-efficacy (7) and motivation (24) to perform prevention behaviors, each of which, in turn, may decrease the likelihood of an individual engaging in behaviors that reduce cancer incidence or mortality (26-28). Because many behaviors (e.g., smoking, physical activity) influence the onset of multiple diseases (29, 30), fatalistic beliefs about cancer prevention may have implications for a variety of health conditions. Unanswered questions about associations between fatalistic beliefs and prevention behaviors highlight the need for empirical tests of these correlations.
This study examines the prevalence of fatalistic beliefs about cancer prevention in the overall US adult population, identifies sociodemographic correlates of these beliefs, and examines whether these beliefs are associated with the likelihood of engaging in three prevention behaviors. Consistent with previous research on associations between sociodemographics and cancer fatalism (7, 12-14, 16, 18, 20, 21), fatalistic beliefs about cancer prevention are expected to be more prevalent among respondents with lower levels of education (Hypothesis 1) and among both Hispanics and African Americans and relative to Whites (Hypothesis 2). Based on the theoretical rationale described above (7, 8, 24), fatalistic beliefs about cancer prevention are expected to reduce the likelihood that individuals engage in prevention behaviors, including regular exercise, not smoking, and eating fruits and vegetables (Hypothesis 3).

Materials and Methods

This study analyzed data from the first wave of the Health Information National Trends Survey (HINTS; ref. 31), conducted by the National Cancer Institute. HINTS used random-digit dialing to recruit Americans aged 18 years or older to participate in a telephone survey between October 2002 and April 2003. HINTS intentionally oversampled Hispanics and African Americans to achieve larger minority representation. Interviews were completed with 6,369 subjects (response rate = 34.5%). Additional details about the sampling strategy are published elsewhere (31).

Measures

Independent Variables: Fatalistic Beliefs about Cancer Prevention. The interview asked respondents to report their level of agreement with three statements, two of which have been used in previous studies, to gauge fatalistic beliefs about cancer prevention: (a) “It seems like almost everything causes cancer” (15, 22, 23); (b) “There’s not much people can do to lower their chances of getting cancer” (14-16, 22, 23); and (c) “There are so many recommendations about preventing cancer, it’s hard to know which ones to follow.” These beliefs address components of fatalism, including pessimism (“everything causes cancer...”), helplessness (“there’s not much...”), and confusion (“hard to know...”). refs. 7, 10, 15, 23-25). Each item was measured with a five-point Likert scale with response categories ranging from strongly disagree to strongly agree. The three belief items had low correlations ($r_{ab} = 0.19$, $r_{ac} = 0.22$, $r_{bc} = 0.21$). These variables were dichotomized to compare those who agreed with each item (strongly or somewhat) to those who disagreed (strongly or somewhat) or had no opinion. We examined each belief item separately.

Dependent Variables: Three Prevention Behaviors. We selected three prevention behaviors (physical activity, not smoking, and fruit and vegetable consumption) as dependent variables based on their known associations with cancer risk reduction (4-6, 28, 29). Each item was asked of all respondents. Physical activity was assessed by asking whether the respondent engages in regular sweat-producing exercise at least once a week. Although this is below the US Surgeon General’s recommended frequency of exercise, any moderately strenuous physical activity is considered beneficial to health (1), and the HINTS did not ask about more regular intervals of physical activity. Smoking behavior was assessed with, “Do you now smoke cigarettes every day, some days, or not at all?” Nonsmokers were defined as those who reported that they do not currently smoke. Fruit and vegetable consumption was assessed by asking how often respondents ate fruit, drank 100% fruit juice, and ate vegetables using three separate questions. Responses to all three items were recoded and summed to produce a measure reflecting the average number of fruits and vegetables consumed per day, which was recoded into adherence or not to the national “five-a-day” guideline in place at the time of the study (32).

Analytic Approach

Analyses were conducted using “svy jackknife” commands in Stata 9.0. Analyses weighted HINTS data to reflect national demographic characteristics and used jackknife SEs for all significance tests to account for oversampling by race/ethnicity and nonresponse. Descriptive analyses examined the prevalence of agreement with fatalistic beliefs about cancer prevention and the proportion of respondents that engaged in the three prevention behaviors.

Testing Hypotheses 1 and 2. Multivariate logistic regression models were used to test associations between sociodemographic characteristics and each fatalistic belief about cancer prevention.

Testing Hypothesis 3. Separate multivariate logistic regression models were used to test associations between fatalistic beliefs about cancer prevention and each prevention behavior. Demographic characteristics that were associated with each behavior in bivariate models at $P < 0.25$ were retained as potential confounders in multivariate models (33). We tested Hypothesis 3 in two steps. Although the three belief items were meant to represent distinct dimensions of a broader concept, not three indicators of a latent construct, their correlations revealed some shared variance. Focusing only on coefficients from models where the three beliefs were entered simultaneously could produce misleading conclusions about their associations with prevention behaviors (34). We thus began the analysis of prevention behaviors by estimating nine “independent” multivariate logistic regression models (three beliefs by three behaviors) to assess whether each individual item was significantly associated with each prevention behavior, net potential sociodemographic confounders. We then estimated three comprehensive models (one model for each behavior) that simultaneously included all three belief items (net potential sociodemographic confounders) to assess which beliefs retained statistically significant associations with each behavior. We present coefficients from these comprehensive models in tables but discuss both sets of results in the text.

Results

Sample Characteristics. The weighted mean age of the sample was 45.2 years (SD, 17.4). More than half of the weighted sample was female (51.9%) and self identified as non-Hispanic White (71.8%; Table 1). More than half of the sample earned <$50,000 per year, 24.3% graduated college, 59.8% were employed, and 63.6% were married or living as married.

Prevalence of Fatalistic Beliefs about Cancer Prevention. Nearly half of respondents agreed or strongly agreed that “everything causes cancer...” about a quarter of subjects agreed or strongly agreed that “there’s not much a person can do...” and nearly three quarters of subjects agreed or strongly agreed that “it’s hard to know which ones to follow” (Table 1). There was also considerable variation in prevention behaviors. Only slightly greater than half of respondents engaged in weekly exercise. More than three fourths were classified as nonsmokers. The majority did not consume five daily servings of fruits and vegetables.

Sociodemographic Characteristics and Fatalistic Beliefs about Cancer Prevention. Consistent with Hypothesis 1, respondents without a high school degree, those who only completed high school, and those with only some college or trade school had higher odds of agreeing with each belief than respondents who graduated from college (Table 2). Contrary to Hypothesis 2, English-speaking Hispanic and
Fatalistic Beliefs about Cancer Prevention and Prevention Behaviors. Consistent with Hypothesis 3, fatalistic beliefs about cancer prevention were associated with a lower likelihood of weekly exercise, being a nonsmoker, and eating five daily servings of fruits and vegetables in eight of nine “independent” models (not shown in tables). The single exception was that “there’s not much a person can do…” was not associated with a lower odds of being a nonsmoker. At least one of the three beliefs remained significantly associated with lower odds of each prevention behavior in the three “comprehensive” models (Table 3). Controlling for potential confounders and the other belief items, “everything causes cancer” was associated with lower odds of being a nonsmoker and fruit and vegetable consumption in accordance with national guidelines. The belief that “there’s not much a person can do…” was associated with lower odds of weekly exercise, whereas the belief that “it’s hard to know…” was associated with lower odds of being a nonsmoker.

Discussion

This study of a nationally representative sample of American adults reveals three major findings. First, fatalistic beliefs about cancer prevention are prevalent in the US adult population. Second, these beliefs are stronger among less-educated Americans but, when controlling for socioeconomic status (and with one exception), are either weaker or equivalent among African Americans and Hispanics compared with Whites. Third, these beliefs are associated with lower odds of engaging in prevention behaviors, including regular exercise, not smoking, and fruit and vegetable consumption.

In light of these associations, the sheer prevalence of fatalistic beliefs about cancer prevention among US adults is a cause for concern. Despite tremendous improvements in the availability of cancer information in the past two decades (e.g., via the Internet; ref. 31), there seems to have been little progress in changing the belief that “everything causes cancer” (23). The fact that only slightly more than a quarter of respondents believed that “there’s not much people can do…” might be viewed as evidence of successful cancer communication and education over the past 20 years. However, the fact that almost three out of four respondents indicated that “there are so many recommendations… it’s hard to know which ones to follow” suggests a sizeable disconnect between the knowledge that one can reduce cancer risk and clarity about how that should be done.

Results also suggest that individuals who hold these beliefs may be at greater risk of cancer. Failure to engage in the three prevention behaviors is linked to an increased risk of several cancers (2-6, 29, 30). These behaviors are also linked to a variety of other serious diseases, such as heart disease and hypertension (29, 30), which suggests that fatalistic beliefs about cancer prevention may also influence the risk of a variety of diseases and conditions. The fact that beliefs about one particular class of disease (cancer) were associated with a lower likelihood of engaging in behaviors linked to a variety of diseases (e.g., heart disease) suggests that beliefs about cancer prevention may influence a variety of disease outcomes. Individuals report higher levels of concern about cancer relative to other prevalent diseases such as heart disease, diabetes, AIDS, and mental health (15). Beliefs about a disease of widespread concern may be particularly salient in promoting or inhibiting health-promoting behaviors.

Collectively, evidence suggests that cancer fatalism is consequential at multiple stages of the cancer continuum (prevention and survivorship). Fatalistic beliefs about cancer survivorship may inhibit individuals from engaging in screening tests out of fear that a positive test result represents a death sentence (13, 17, 18, 24). Fatalistic beliefs about cancer prevention may inhibit individuals from engaging in prevention behaviors by increasing external locus of control (7, 8) and reducing both self-efficacy (7) and motivation (24) to perform these behaviors. It nevertheless remains unclear whether cancer fatalism is a unidimensional construct or whether it represents a larger, multidimensional phenomenon comprised of prevention, screening, and survivability subdimensions. Future studies might measure cancer fatalism at each stage of the cancer continuum and conduct psychometric analyses to enhance our understanding of the construct, its antecedents, and its potential consequences.

Table 1. Weighted sample characteristics and variable distributions, HINTS 2003

<table>
<thead>
<tr>
<th>Sociodemographic characteristics</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>N = 6,369, unless otherwise noted</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>51.9</td>
</tr>
<tr>
<td>Race/ethnicity (nonmissing n = 6,068)</td>
<td></td>
</tr>
<tr>
<td>Non-Hispanic White</td>
<td>71.8</td>
</tr>
<tr>
<td>Non-Hispanic African American</td>
<td>10.5</td>
</tr>
<tr>
<td>Hispanic, English speaking</td>
<td>5.8</td>
</tr>
<tr>
<td>Hispanic, non-English speaking</td>
<td>5.9</td>
</tr>
<tr>
<td>Other race/ethnicity</td>
<td>6.0</td>
</tr>
<tr>
<td>Income</td>
<td></td>
</tr>
<tr>
<td>Income not reported</td>
<td>12.3</td>
</tr>
<tr>
<td>&lt;$25,000 per year</td>
<td>25.5</td>
</tr>
<tr>
<td>$25,000 to $49,999</td>
<td>27.0</td>
</tr>
<tr>
<td>$50,000 to $74,999</td>
<td>15.3</td>
</tr>
<tr>
<td>&gt;$75,000</td>
<td>19.9</td>
</tr>
<tr>
<td>Education (nonmissing n = 6,139)</td>
<td></td>
</tr>
<tr>
<td>Less than high school degree or equivalent</td>
<td>16.9</td>
</tr>
<tr>
<td>Completed high school</td>
<td>32.0</td>
</tr>
<tr>
<td>Some college or technical school</td>
<td>26.8</td>
</tr>
<tr>
<td>Completed college</td>
<td>24.3</td>
</tr>
<tr>
<td>Employed (nonmissing n = 6,133)</td>
<td>59.8</td>
</tr>
<tr>
<td>Married or living as married</td>
<td>63.6</td>
</tr>
<tr>
<td>Has health insurance (nonmissing n = 6,152)</td>
<td>85.4</td>
</tr>
<tr>
<td>Family member has had cancer</td>
<td>61.9</td>
</tr>
</tbody>
</table>

NOTE: Cells contain weighted percentages, excluding cases with missing values.

African American respondents were less likely than non-Hispanic White respondents to believe that “everything causes cancer,” and English-speaking Hispanic respondents were also less likely than non-Hispanic White respondents to believe that “it’s hard to know…” Spanish-speaking Hispanic respondents, however, were more likely than non-Hispanic White respondents to believe “there’s not much a person can do…” Age was positively associated with one fatalistic belief, negatively associated with a second, and unassociated with the third. Compared with males, females had higher odds of agreeing with the belief that “everything causes cancer.” Income, employment status, and insurance status were not associated with any of the three fatalistic beliefs about cancer prevention. Being married or living as married (compared with being divorced, widowed, separated, or never married) was positively correlated with two of the three beliefs. Compared with those without a family cancer history, respondents with a family cancer history were more likely to believe that “everything causes cancer.”

Sociodemographic characteristics

Fatalistic beliefs about cancer prevention (% who engage in the behavior)

- Nonsmoker (n = 6,213) 77.8
- Exercise weekly (work up a sweat; n = 6,154) 54.4
- Eat five servings of fruits/vegetables a day (n = 6,120) 13.5

NOTE: Cells contain weighted percentages, excluding cases with missing values.
This study also adds to a large body of evidence concluding that cancer fatalism is strongly and negatively associated with education (7, 9–11, 13, 14, 20, 21, 23). All three fatalistic beliefs about cancer prevention were stronger among respondents with lower levels of education. Contrary to previous literature, however, we found little evidence that fatalistic beliefs about cancer prevention were stronger among Hispanics and African Americans compared with Whites. In fact, there were three instances where fatalistic beliefs were lower among African Americans and English-speaking Hispanics relative to White respondents. The only result consistent with study hypotheses with respect to demographics was the finding that Spanish-speaking Hispanics were more likely than Whites to believe that “there’s not much a person can do…”

At first glance, these results seem contrary to previous findings. Indeed, studies consistently find that these fatalistic beliefs about cancer survivorship are more prevalent among African Americans and Hispanics compared with Whites, even when controlling for education (13, 14, 18, 21). However, the existing evidence for racial/ethnic differences in fatalistic beliefs about cancer prevention is far less compelling. One study found no differences between Whites and Hispanics in these beliefs (14); a second found significant differences between recent Hispanic immigrants and White respondents. The fatalistic beliefs about cancer prevention but failed to control for dramatic differences in education (16), whereas a third found far greater racial/ethnic differences in fatalistic beliefs about cancer survivorship compared with cancer prevention.
(13). All three studies that reported racial/ethnic differences in fatalistic beliefs about cancer prevention used samples from small geographic locations which limit their generalizability (12, 13, 16).

One might thus conclude that fatalistic beliefs about cancer prevention and survivorship are associated with different sociodemographic characteristics. Our results are consistent with the argument that racial/ethnic differences in fatalistic beliefs about cancer prevention may be attributable to differences in socioeconomic status (9, 10), although the finding that Spanish-speaking Hispanic respondents were more likely to hold at least one fatalistic belief about prevention than Whites suggests that ethnic differences in cancer prevention are largely attributable to information overload, particularly among less-educated populations (rather than specific racial/ethnic groups) to dispel these beliefs. Educators could likewise develop simpler cancer prevention messages that can be widely disseminated and understood by less-educated individuals.

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