

# BLACK AMERICANS' PERCEPTIONS OF CANCER

## A Study Utilizing the Health Belief Model

James H. Price, PhD, MPH, Sharon M. Desmond, PhD, Margaret Wallace, MA, Daisy Smith, RN, and Paula W. Stewart, BA  
Toledo, Ohio

**The purpose of this study was to determine black adults' knowledge and perceptions of cancer by utilizing the Health Belief Model. The subjects were obtained by randomly selecting 11 churches from a list of 33. There were 769 black adults who responded to the survey (64 percent response rate). Mean age of respondents was 44.3 years, SD = 14.7. Only 29 percent were able to correctly identify all seven of the American Cancer Society warning signs; 13 percent were unable to identify any warning signs. One in four believed it was likely they would develop cancer sometime in their life, and 42 percent believed blacks were more susceptible to cancer than whites. Forty-one percent believed most people who get cancer will die from it. Perceived barriers to treatment included cost and pain. A large number of significant differences ( $P < .01$ ) were found when responses were examined in relation to the sex, educational level, and age of the subjects.**

Black Americans constitute approximately 90 percent of the nonwhite population, or about 28 million

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From the Department of Health Promotion and Human Performance, University of Toledo, and the Cordelia Martin Health Center, Toledo, Ohio. Requests for reprints should be addressed to Dr. James H. Price, Department of Health Promotion and Human Performance, University of Toledo, Toledo, OH 43606.

Americans (12 percent of the total population).<sup>1</sup> They have the highest overall age-adjusted rates of cancer incidence and cancer mortality of any US population group.<sup>2</sup> For the 25 primary cancer sites for which data are available, blacks have lower survival rates for all but three relatively low-incidence cancers (brain, multiple myeloma, and ovary). It is thought these differences in cancer survival rates are substantially due to social and/or environmental factors.<sup>2</sup> Blacks are overrepresented in the lowest socioeconomic stratum, where they are likely to be present at a rate almost three times their prevalence in the general population.<sup>3</sup> Socioeconomic status may affect one's priorities in life, employment status, nutritional status, immune status, and educational status (which in turn affects cancer prevention knowledge, attitudes, and beliefs).

Available literature on cancer-related knowledge, attitudes, and practices for the black population is sparse. Results from the studies that have been conducted indicate blacks are less knowledgeable about the signs and symptoms of cancer, and about which foods can increase cancer risk.<sup>4-6</sup> Furthermore, black respondents are less likely to engage in cancer risk-reduction behaviors, less likely to perceive the importance of early detection, more pessimistic about their chances of survival, more likely to underestimate the prevalence of cancer, and more likely to believe in cancer myths.<sup>4,7,8</sup> There are conflicting findings as well. Black participants in the Cancer Prevention Awareness Survey Wave II<sup>9</sup> believed they were more

susceptible to cancer, whereas those responding to the EVAXX study<sup>7</sup> believed they were less susceptible. Two studies found blacks were most likely to obtain their cancer information from the media<sup>4,9</sup> while another found they were less likely to utilize such sources.<sup>7</sup>

The Cancer Prevention Awareness Survey Wave II examined the public's (N = 1,876) knowledge, attitudes, and practices regarding cancer prevention and risk, and involved a subsample of 263 black adults. The results indicated that blacks (17 percent) were significantly less likely than the general population to agree that the chances of being cured of cancer are better today than ever before. Fifty percent of the blacks claimed there was not much a person could do to prevent cancer. Almost 46 percent claimed everything seems to cause cancer.

The most recent study to examine black adults' (20 years of age or older) perceptions and prevention practices regarding cancer was a study of 568 subjects.<sup>10</sup> The study found knowledge of cancer warning signs was high, ranging from about two thirds correct to better than 90 percent on selected warning signs. Between 35 and 75 percent of respondents, however, were likely to believe surgery will cause cancer to spread, getting treated for cancer is often worse than the disease, and chemotherapy, surgery, and radiation therapy all do more harm than good. Such low perceptions of the efficacy of cancer therapy are likely to cause a delay in seeking help for cancer. Cancer susceptibility belief was lowest in older respondents, especially women. A surprising finding was that a belief in susceptibility to cancer did not predict taking secondary preventive actions (ie, having cancer screening tests). Instead, the authors found it was predictive of a belief that cancer is a death sentence.

The purpose of this study was to determine black adults' (20 years of age or older) perceptions of cancer by utilizing the Health Belief Model (HBM). This model asserts that a variety of factors have an impact upon an individual's decision about an illness or condition resulting in behavior change. These factors include cues to action, perceived susceptibility and severity of the disease or condition, the perceived barriers and benefits of action, and health motivation.<sup>11,12</sup> Modifying variables are also included in the model (eg, demographics, knowledge, and interpersonal relations). One reason the HBM was chosen for this study was because recent research has indicated that utilizing this model with black populations is valid and reliable.<sup>13</sup> Because of constraints of limited

space on the questionnaire, health care motivation was not assessed.

## METHODS

### Subjects

The subjects for this study were obtained by randomly selecting 11 black churches from a list of 33 large black churches in a midwestern community (population 500,000). The black church was selected as the locus for data collection because it is one of the most important social institutions in the black community.<sup>14</sup> All adults 20 years of age and older were requested by the minister to complete the anonymous and confidential survey. A total of 1,200 adults were approached to participate in the study.

### Questionnaire

The questionnaire, developed by the researchers, was based on a review of the literature. The questionnaire was designed to measure components according to the Health Belief Model. The instrument consisted of five demographic variables (age, sex, race, educational level, and occupation); seven background variables; two items regarding the seeking of cancer treatment (cues to action); 37 knowledge items concerning warning signs, prevention techniques, and causes of cancer; items concerning perceived severity (n = 3) and susceptibility (n = 16) to cancer; and items about the perceived benefits (n = 3) and barriers (n = 6) to treatment; three beliefs concerning the respondents' relationships with health care professionals, and 12 potential sources of cancer information. Responses were dichotomized (true/false and yes/no) for the majority of questionnaire items.

Internal consistency reliabilities were calculated for each subscale utilizing Cronbach's alpha. Internal reliability for the knowledge subscale was .51; the reliabilities for the other subscales were .49, perceived susceptibility; .36, perceived severity; .52, perceived barriers; .49, perceived benefits; and .47, cues to action. Moderate to low internal reliabilities could be expected as many of the subscales contained few items. In addition, the findings for this study are based on individual item responses, as opposed to group subscale scores. Therefore, results will not be affected by these reliabilities.

Readability of the questionnaire was assessed utilizing the SMOG readability formula.<sup>15</sup> The questionnaire was written at a 7th grade ( $\pm 1.5$ ) level.

## RESULTS

There were 769 black adults who responded to the survey (64 percent response rate); only 610 of the questionnaires, however, were sufficiently completed for analysis purposes. Those who were least likely to respond were older male subjects and those who were less well educated. There were considerably more female ( $n = 461$ ) than male subjects ( $n = 149$ ) in the final sample. The respondents were fairly evenly divided by age: young adults, 20 to 35 years of age ( $n = 189$ ); middle-aged adults, 36 to 50 years of age ( $n = 226$ ); and older adults, 51 to 84 years of age ( $n = 195$ ). The mean age of the subjects was 44.3 years ( $SD = 14.7$ ). Those who had only an elementary school education ( $n = 26$ ) were the least common group; the two largest groups were those who attended high school ( $n = 201$ ), and those who attended college ( $n = 202$ ). Fifty-four attended technical school and 67 attended graduate school. Sixty did not identify their level of education. For analysis purposes, education was collapsed into three groups. Those with a grade school and high school or technical school background formed one group, those who attended college formed another, and those who attended professional or graduate school formed the third group.

Chi-square analyses and *t* tests, where appropriate, were conducted to identify any initial demographic differences within the sample. There was no difference in educational level or age between male subjects and female subjects. There was a significant difference ( $P < .01$ ), however, in educational level among the three age groups as well as a significant difference ( $P < .01$ ) in age among the three educational levels. Because of this, subsequent chi-square analyses by educational level examined each item in relation to a specific age group, and analyses by age examined each item in relation to a specific educational level. Such analyses allowed the effects of age and educational level to be controlled.

### Knowledge of the Etiology of Cancer

Few respondents (4 percent) incorrectly believed one could develop cancer through physical contact with a person who has cancer. Furthermore, most of the subjects knew cigarette smoking (88 percent) and chewing tobacco/snuff (72 percent) cause cancer. More than half of the subjects, however, incorrectly believed cancer runs in families (hereditary) (52 per-

**TABLE 1. ADULTS' KNOWLEDGE OF CANCER  
(N = 610)**

Items	Responded Correctly (%)
<b>Etiological factors</b>	
Physical contact with a person who has cancer (F)*	96
Old age (F)	94
Not exercising (F)	90
Cigarette smoking (T)**	88
Being hit on a part of the body (F)	87
Chewing tobacco/snuff (T)	72
Continual irritation to skin (F)	71
Stress (F)	65
The disease runs in the family (hereditary) (F)	48
Pollution in the environment (T)	45
Drinking too much alcohol (T)	39
Eating high fat diet (T)	38
Diet poor in vitamins/minerals (T)	35
<b>Prevention techniques</b>	
Not smoking cigarettes (T)	90
Not chewing tobacco/snuff (T)	73
Not staying in the sun too long (T)	72
Taking vitamins and minerals (F)	61
High fiber diet (T)	61
Regular exercise (F)	58
Little use of alcohol (T)	49
Maintain normal weight (T)	42
Regular visits to your doctor (F)	14

\* F—false.

\*\* T—true.

cent), and more than half did not know drinking too much alcohol (61 percent), eating a high fat diet (62 percent), or a diet poor in vitamins and minerals (65%) could increase one's chances of developing cancer (Table 1).

Chi-square analysis by sex of respondents found there were significant differences ( $P \leq .01$ ) on three of the etiology items. Male subjects were more likely to believe environmental pollution (55 vs 42 percent) and a diet poor in vitamins and minerals (44 vs 32 percent) could cause cancer, whereas female respondents were less likely to believe touching a person with cancer could cause cancer (2 vs 7 percent).

There was one significant difference found based on level of education. When examining middle-aged respondents only, those with more education were more likely than those with less education to believe use of chewing tobacco/snuff will cause cancer.

Examination of differences based on age, when controlling for level of education, found that among

the less-well-educated respondents, the older subjects were more likely than the two younger groups to believe cancer runs in families (hereditary). Regardless of educational level, younger subjects were more likely to believe being hit on a body part is likely to cause cancer, when compared with the two older groups.

### Knowledge of the Prevention of Cancer

Once again, most subjects knew refraining from smoking cigarettes (90 percent) would help prevent cancer. Fewer subjects were aware that high-fiber diets (61 percent), little use of alcohol (49 percent), and maintaining normal weight (42 percent) can help prevent cancer. The majority of students (86 percent) believed regular visits to their doctor could help prevent cancer (Table 1).

Chi-square analysis by sex of the respondent found there were significant differences ( $P \leq .01$ ) on four of the prevention items. Male subjects were more likely to believe you could prevent cancer by not chewing tobacco/snuff (82 vs 71 percent) and by limiting use of alcohol (60 vs 46 percent), whereas women were more likely to support taking vitamins and minerals (66 vs 46 percent) and regularly exercising (63 vs 42 percent).

Three differences in perceptions of the causes of cancer by level of education were found. Middle-aged respondents with more education, when compared with middle-aged subjects with less education, were more likely to believe refraining from tobacco chewing and consuming a high-fiber diet would reduce cancer risks, and less likely to believe taking vitamins and minerals would help prevent cancer. There were no significant differences in knowledge of cancer prevention methods by age of respondents when controlling for their education level.

### Knowledge of Cancer Warning Signs

The most commonly recognized cancer warning sign (77 percent) was a lump or bump in the breast or elsewhere. Four of the warning signs were recognized by approximately two thirds of the respondents (unusual bleeding or discharge, change in bowel or bladder habits, change in a wart or mole, and a sore that does not heal). The least commonly recognized warning signs, recognized by about half of the respondents, were prolonged hoarseness or cough and indigestion and/or difficulty in swallowing (Table 2).

**TABLE 2. ADULTS' KNOWLEDGE OF CANCER WARNING SIGNS (N = 610)**

Sign	Responded Correctly (%)
<b>ACS* recognized sign</b>	
Lump/bump in breast or elsewhere	77
Unusual bleeding/discharge	69
Change in bowel/bladder habits	64
Change in wart/mole	64
Sore that does not heal	63
Hoarseness or cough	56
Indigestion/difficulty swallowing	46
<b>Not ACS recognized sign**</b>	
Chest pains	83
Loss of feeling in arms/legs	82
Rash on body	80
Difficulty breathing	77
Upset stomach	77
Severe headache	76
Loss of hair	70
Unexplained gain/loss of weight	38

\* ACS—American Cancer Society.

\*\* None of these signs are considered warning signs for cancer.

When considering the total number of warning signs recognized, 29 percent of the respondents were able to recognize all seven American Cancer Society (ACS) warning signs. However, 20 percent could recognize only three or less, and 13 percent were not able to identify any of the seven warning signs.

Chi-square analysis of responses by sex found four significant differences ( $P \leq .01$ ). Women were more likely to identify four warning signs, one of which was incorrect: lump in the breast or elsewhere (88 vs 66 percent), change in a wart or mole (66 vs 54 percent), hoarseness or cough (59 vs 45 percent), and chest pains (85 vs 75 percent).

There were nine significant differences found when examining level of education of respondents and knowledge of cancer warning signs. Younger subjects with more education were more likely than those with less education to believe loss of hair is a warning sign of cancer. Middle-aged subjects with more education were more likely than those with less education to believe unusual bleeding or discharge is a warning sign of cancer. Older subjects who were better educated were more likely to believe chronic indigestion or difficulty in swallowing, persistent hoarseness or cough, chest pains, a sore throat that does not heal,

**TABLE 3. ADULTS' PERCEIVED SUSCEPTIBILITY TO AND SEVERITY OF CANCER (N = 610)**

Item	Agreed (%)	
<b>Cues to action</b>		
Which would make you go to a doctor for a cancer check-up?*		
Wouldn't go; I don't want to know	4	
If a family member insisted	15	
If a friend insisted	10	
Would go on own if I had a warning sign	94	
<b>Susceptibility</b>		
How likely is it that you will develop cancer sometime in your life?		
Very likely/likely	27	
Maybe	45	
Unlikely/not likely at all	29	
	<b>Yes</b>	<b>Not Sure</b>
A black person is more likely to get cancer than is a white person	42	31
Men are more likely to get cancer than are women	32	38
Young people rarely get cancer	14	31
<b>Severity</b>		
Most people who get cancer will die from it	41	28
A black person with cancer is more likely to die than a white person with cancer	35	34
Most people with cancer cannot carry on their normal life	28	21

\* Respondent could check all that applied.

a change in bowel or bladder habits, and a change in a wart or mole are warning signs of cancer, when compared with those with less education. Whereas, older, less-educated subjects were more likely to believe loss of hair is a warning sign of cancer when compared with the more educated older subjects.

**Health Belief Model Variables**

When respondents were asked whether they would go to a doctor for a cancer checkup (cue to action), the vast majority (94 percent) claimed they would go on their own if they had a warning sign of cancer, whereas 4 percent claimed they would not go because they would not want to know whether they had cancer (Table 3). There were no significant differences be-

tween men and women when examining cues to action. One item was found to be significantly different based on education level when controlling for age. The more education younger subjects had, the more likely they were to claim they would go to a doctor on their own if they had one of the warning signs of cancer. There were no significant differences in cues to action based on age of the subjects when controlling for level of education.

As for perceived susceptibility, approximately one in four black adults believed it was "very likely" or "likely" they would develop cancer sometime in their life (Table 3). Forty-two percent believed a black person is more likely to develop cancer than a white person, and 31 percent were not sure. Thirty-two percent of the respondents believed men are more likely than women to develop cancer. One third of the respondents reported they were not sure whether young people rarely get cancer. Male respondents were significantly more likely than female respondents to believe blacks are more likely than whites to get cancer (53 vs 39 percent) and that men are more likely than women to develop cancer (39 vs 29 percent). There were no significant differences in perceived susceptibility based on level of education or age of the respondents.

When considering perceived severity, 41 percent of the respondents supported the belief that most people who get cancer will die from it (28 percent were not sure) (Table 3). One third of the respondents agreed a black person with cancer is more likely to die from it than is a white person with cancer (34 percent were not sure). Almost half of the respondents either supported the idea or were not sure that a person with cancer cannot carry on a normal life. Men were significantly more likely than women to support the belief that blacks are more likely to die from cancer than are whites (47 vs 31 percent). Fewer educated middle-aged subjects were more likely to believe people with cancer cannot carry on their normal life functions than were the more educated middle-aged respondents. There were no significant differences in perceived severity of cancer by age when level of education was controlled.

Six survey questions examined barriers to a preventive cancer orientation (Table 4). One third of the respondents claimed they were not sure where they should go to be tested for cancer. Twenty percent said testing for cancer costs too much money. One in six claimed that to be tested for cancer would take a lot of time. Finally, the majority of respondents claimed

**TABLE 4. ADULTS' PERCEIVED BARRIERS TO AND BENEFITS OF TREATMENT (N = 610)**

Item	Yes (%)	Not Sure (%)
<b>Barriers</b>		
Treatments for cancer are expensive	79	15
To be tested for cancer takes a lot of time	17	25
Testing for cancer costs too much money	20	28
I am not sure where to go to be tested for cancer	34	14
Cancer treatments make you feel sick	62	31
It is difficult for me to go to a place to be tested for cancer	9	12
<b>Benefits</b>		
There are treatments that will cure cancer	56	24
Today, more people are being cured of cancer than were cured in the past	79	17
Finding cancer early will help a person get better	89	8
<b>Beliefs about the health care system</b>		
Doctors do not tell you the truth if you get cancer	22	24
Hospital workers are not as friendly toward black people as they are toward white people	20	34
A black person is more likely to get good treatment from a doctor than is a white person	5	27

treatments for cancer are expensive (79 percent) and make you feel sick (62 percent), while 31 percent were not sure.

There were no significant differences in perceived barriers by level of education. Examination by age, however, found younger, college-educated subjects were more likely to believe cancer tests take a lot of time and cost too much money than were older, college-educated subjects.

Statements concerning the benefits of cancer treatment were agreed to by the majority of respondents: 89 percent believed that early detection of cancer will help a person get better; 79 percent believed more

people are being cured of cancer than were cured in the past; and 56 percent believed there are treatments available that will cure cancer (Table 4). There were no significant differences found based on sex of the respondents or their level of education. However, older respondents, regardless of education level, were more likely to believe there are treatments that can cure cancer. Also, older, less-well-educated respondents perceived more people with cancer being cured today than were cured in the past, when compared with the younger, less-well-educated subjects.

Examination of beliefs about the health care system found approximately 20 percent of the respondents believed doctors would not tell a patient the truth if the patient got cancer, and that hospital workers are not as friendly toward black people as they are toward white people (Table 4). Middle-aged subjects with more education were less likely to believe that physicians do not tell patients the truth about cancer, when compared with middle-aged subjects with less education.

### Sources of Cancer Information

Respondents were asked to identify their sources of cancer information. From the list of 12 potential sources, three were identified by more than half of the respondents: television (73 percent), pamphlets (60 percent), and magazines (52 percent). The sources least likely to provide cancer information included friends (18 percent), work (15 percent), and the school (14 percent). Other cancer information sources utilized by these respondents included physicians (47 percent), newspapers (41 percent), books (34 percent), family members (28 percent), radio (24 percent), and drug stores (12 percent). Men were significantly more likely than women to report they received cancer information from television (82 vs 70 percent), newspapers (51 vs 37 percent), and radios (33 vs 21 percent). Women were more likely to report they received cancer information from their physician (51 vs 34 percent).

Better educated, older subjects were more likely to have received cancer information from school and books. Younger subjects with less education were more likely to have received cancer information at work. Middle-aged subjects were more likely to have received cancer information from college classes, whereas older subjects were more likely to have received cancer information from their physician.

### Additional Cancer Information

The respondents were asked what types of cancer information they would like to receive, and were given a list of five topics from which to choose. They were also able to write in their own topic if they so desired. The topic selected by the majority of respondents (75 percent) was how to prevent cancer. The other topics selected were, in order: how to tell if you have cancer (55 percent), what to do if you get cancer (55 percent), what types of treatments are there for the various forms of cancer (54 percent), what are your chances of dying if you get cancer (25 percent), and other (3 percent). When asked what cancer information they would like to receive, respondents did not differ significantly by sex, educational level, or age.

### DISCUSSION

Knowledge of the etiology of cancer was reasonably high for eight of the 13 topics examined in this study. Most respondents were aware that cigarette smoking and chewing tobacco/snuff cause cancer. Far fewer subjects, however, were aware that too much alcohol consumption or high-fat diets increase one's chances of developing cancer. Also, a majority of respondents (52 percent) incorrectly perceived cancer as hereditary.

Furthermore, many subjects were not aware that high-fiber diets and maintaining normal weight could help prevent cancer. There appears to be much that could be taught in the black community about cancer prevention, including those areas where some blacks have traditionally had problems because of being economically disadvantaged (ie, environmental pollution, dietary factors, and alcohol misuse).

It appears that the vast majority of subjects incorrectly perceived that regular visits to their doctor could prevent cancer. It is not clear whether respondents meant that simply visiting their physician regularly would prevent cancer or if they actually meant that regular physician visits would result in identification of the cancer at an earlier, more treatable stage, resulting in a less serious prognosis. Eighty-nine percent of these respondents cited early detection as a benefit of cancer treatment. Also, the majority of respondents did not perceive limited alcohol consumption or maintaining normal weight as methods to help prevent the development of cancer. This lack of recognition of factors related to cancer may in part explain

why only 42 percent of the respondents believed a black person is more likely to develop cancer than a white person.

Knowledge of ACS cancer warning signs was not very high for these respondents. Only one cancer warning sign was known by more than two thirds of the respondents, a lump or bump in the breast or elsewhere. Twenty-nine percent were able to identify all seven ACS warning signs. More surprising was the finding that almost 20 percent believed chest pains and 25 percent believed severe headaches were signs of cancer. Unfortunately, such misperceptions might create unnecessary anxiety since so many individuals have such symptoms, or they may cause respondents to ignore actual cancer warning signs. Thus, in contrast to the findings of Bloom et al,<sup>10</sup> this study does not support the assertion "that the ACS has successfully educated the public about these signs and further effort in that direction would be both inefficient and redundant."

The respondents had a curious mix of responses to the various components of the HBM. The most important cue to action for seeking a medical checkup was if the respondent discovered a warning sign of cancer, endorsed by 94 percent of the respondents. Unfortunately, such a positive finding is somewhat offset by the fact that many respondents were unable to correctly identify the warning signs and therefore would not act upon such cues.

Generally, the majority of respondents did not perceive themselves susceptible to cancer. Furthermore, neither education nor age significantly affected perceived susceptibility to cancer. Thus, if blacks do not perceive themselves as more susceptible to cancer, and they are not able to adequately identify the warning signs of cancer, it is not surprising they are more likely than whites to report to physicians with metastatic cancer.<sup>2</sup> The probability of such a negative consequence is further increased because most of the respondents perceived significant barriers to cancer treatments, such as "they are expensive" and "they make you feel sick." All of these factors together seem to outweigh the respondents' perceptions of benefits of cancer treatments, namely that early detection will help a person get better and that more people are being cured of cancer today than were cured in the past.

Finally, the majority of respondents seem to have developed their perceptions of cancer from the mass media. Unfortunately, the mass media is more likely

to report sensationalized cancer events rather than a balanced perspective on the prevention, etiology, diagnosis, and treatment of cancer. Only one in seven of these respondents claimed they received information about cancer from schools. It seems schools should play a more active role in educating people about cancer. Fortunately, this may be changing. Price et al<sup>16</sup> found that a majority of both black and white adolescents claimed they were receiving cancer information in schools.

The intention of this study was to assess a community's understanding of cancer in order to design an educational intervention program to increase cancer survival among the black population. The HBM was utilized as the theoretical framework to assess the knowledge, perceptions, and misperceptions of cancer in the subjects. The comprehensiveness of this model has provided numerous insights regarding points of intervention for reducing cancer susceptibility in this community.

**Acknowledgment**

This study was funded by a grant from the Ohio Department of Health.

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