

Assessment of Preventive Health Knowledge and Behaviors of African-American and Afro-Caribbean Women in Urban Settings

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Financial support: This project was supported by a grant from the Kellogg Foundation.

Objectives: This report measures the extent of health knowledge and preventive behaviors of African-American and Afro-Caribbean women in New York City.

Methods: Two-hundred-twenty-one females in 10 Brooklyn-area beauty salons were surveyed in mid-June 2004. Participants completed a 30-item questionnaire (Cronbach's alpha=0.76) focusing on six domains: heart health, breast health, prostate health, second-hand smoke, asthma and sexual health. The instrument included 10 items on preventive behaviors related to the aforementioned domains. Mean knowledge scores were calculated, and analyses were performed to evaluate the factors associated with higher knowledge scores and with greater likelihood of preventive health behaviors.

Results: Despite a high level of knowledge about risk factors and symptoms for several common diseases, a large percentage of the sample engaged in high-risk behaviors. In addition, higher knowledge scores were associated with family history of heart disease ($p=0.035$), family history of prostate cancer ($p=0.032$) and being a member of an HMO ($p=0.001$). Higher scores, in turn, were associated with not currently smoking ($p=0.049$) and going for a blood cholesterol screening in the past year ($p=0.045$).

Conclusion: Future intervention efforts should place greater focus on educating participants about symptoms and risk factors for commonly occurring diseases in the community, and on generating behavioral changes.

Key words: African Americans ■ preventive health behaviors ■ health risk knowledge ■ women's health

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INTRODUCTION

African-American women bear a disproportionate amount of many diseases in the United States. Although certain cancer incidence rates in African-American women appear to be lower than those in Caucasian women, mortality rates for all cancers are 30% higher in African-American women.¹ African-American women have the highest mortality rate from breast cancer of all population groups (34.9 out of 100,000), and the highest mortality rate from lung cancer (40.2 out of 100,000) of all minority groups.² African-American women diagnosed with breast cancer are twice as likely to die from the disease within five years after diagnosis as are Caucasian women.³ Non-Hispanic African-American women have the highest death rate from AIDS (13 out of 100,000)—this is nearly 13 times the rate for Caucasian females. This disparity is echoed in chronic disease rates: African-American women have a 40% greater mortality rate from heart disease (241 out of 100,000) than Caucasian women. African-American women have the highest death rate from stroke (78.1 deaths out of 100,000), compared to 57.8 out of 100,000 for Caucasian women.⁴

Many reasons for these disparities exist. Some researchers have attributed the inequality in mortality and morbidity rates to differences in socioeconomic levels and uneven access to healthcare resources and services.⁵ Others state the increased mortality found in African-American women may be due to a difference in genetic susceptibility. Jones and colleagues, for example, reported that African-American women tend to have more aggressive breast tumors than do their Caucasian peers.⁶

Although the mechanisms that lead to these disparities are still being investigated by researchers, most health professionals believe that the increased physiological risks found in African-American women can be reduced through the practice of established and accepted health prevention behaviors. More than half (52%) of African-American women age >40 report not having

had a mammogram within the past two years, compared to 26% of Caucasian women.⁷ This suggests that African-American women often have a more-advanced stage of disease at diagnosis, which in part explains the observed decrease in survival rates.

Furthermore, the disproportionate practice of unhealthy behaviors, such as tobacco use, poor diet and physical inactivity, contribute heavily to the premature mortality of minority populations. Nearly one in five (18%) of all African-American women are smokers.⁸ A six-year national longitudinal study found that more than two-thirds of African-American women ages 20–74 can be classified as overweight, and 4 out of 10 (37.6%) as obese.⁹ Three out of 10 (36.4%) African-American women have elevated blood pressure, nearly double the prevalence in Caucasian women (19.7%).¹⁰

The communities of Bedford Stuyvesant, Crown Heights, East New York and Flatbush/East Flatbush are some of the most ethnically and culturally diverse neighborhoods in the country. More than 7 out of 10 res-

idents of these communities are black (78%); 4 out of 10 (38%) are immigrants. The majority (70%) of the immigrant population are from the Caribbean countries of Barbados, Jamaica, Guyana, Haiti, or Trinidad and Tobago.¹¹

These communities experience higher-than-average hospitalization rates for asthma, diabetes, cardiovascular disease, high blood pressure and sexually transmitted diseases, and have higher age-adjusted mortality rates from breast cancer.¹² Moreover, many residents in these communities live at or below the poverty line.¹³ Socioeconomic factors, as well as lack of access to medical care and delay in seeking healthcare, are related to the poor health outcomes in these communities.¹⁴

The Arthur Ashe Institute for Urban Health (AAIUH) was created in December 1992 to reduce mortality and morbidity in minority urban areas through improved access to care and increased health knowledge. AAIUH has developed an innovative approach that utilizes beauty salons as health-promotion venues.

Table 1. Demographic characteristics of respondents and high and low scorers in Brooklyn Preventive Health Study, June 2004

Characteristic	N	Participants with Low Knowledge Scores (n=57)	Participants with High Knowledge Scores (n=49)
Age			
<30	82 (37%)	20 (35%)	13 (27%)
30–49	106 (48%)	23 (40%)	32 (65%)*
≥50	33 (15%)	14 (25%)	4 (8%)*
Married or Living with Companion			
Yes	74 (33%)	23 (40%)	15 (31%)
No	147 (66%)	34 (60%)	34 (69%)
Missing	2 (1%)		
Insurance Status			
Health insurance	185 (83%)	48 (87%)	44 (92%)
No health insurance	36 (16%)	7 (13%)	4 (8%)
Missing	2 (1%)		
Type of Insurance			
HMO/HIP	56 (25%)	8 (15%)*	19 (40%)*
Medicaid	47 (21%)	16 (30%)	8 (17%)
Medicare	12 (5%)	3 (5%)	7 (14%)
Other	69 (31%)	21 (38%)	12 (25%)
Education			
College experience (college graduate, currently attending college, some college)	142 (64%)	26 (46%)	43 (88%)*
High-school graduate or some high school	61 (27%)	31 (54%)*	6 (12%)
Missing responses	20 (9%)		
Place of Birth			
Born in the United States	110 (49%)	34 (60%)	14 (29%)
Born in a Caribbean Country	91 (47%)	18 (32%)	30 (61%)**
Not born in the United States or in a Caribbean country	20 (9%)	4 (7%)	5 (10%)
Family Medical History			
Asthma	135 (61%)	33 (58%)*	29 (59%)
Breast cancer	59 (26%)	15 (26%)	15 (26%)
Heart disease	61 (27%)	12 (21%)	18 (37%)
Prostate cancer	44 (20%)	10 (18%)	15 (31%)

*p<0.05; **p<0.005

Barbershops and beauty salons cater to wide segments of the community and occupy a unique place within African-American (members of the African diaspora who were born in the United States) and Afro-Caribbean [members of the African diaspora born in the predominantly black and non-Hispanic islands of the Caribbean (i.e., Haiti, Guyana, Barbados, Jamaica, and Trinidad and Tobago)] neighborhoods.

Solomon et al. have noted that the cosmetologist is a natural helper, offering advice, support, empathy and often health information.¹⁵ Patrons who are either waiting for or receiving services are a captive audience for on-site health education and health-promotion presentations. In a study of licensed cosmetologists in the North Carolina area, Linnan et al. found that cosmetologists typically saw 47 clients per week, spent between 30 minutes to an hour with each client, and were comfortable talking to clients about a wide variety of health

issues.¹⁶ Solomon et al. noted that most African-American beauty salons observed were equipped with a television and refreshments.¹⁷ Other researchers have studied the success of beauty salons as health-promotion sites for various campaigns, including early detection of breast cancer,¹⁸ AIDS prevention and awareness,¹⁹ and diabetes education.²⁰ For these reasons, AAIUH has chosen to deliver its health-promotion and education programs through barbershops and beauty salons in Central Brooklyn.

To date, AAIUH has piloted several health education initiatives (Soul Sense of Beauty, Black Pearls, Different Fades of Health) targeted at African-American and Afro-Caribbean male and female customers of personal care establishments in Brooklyn. Each campaign differs in specific health topic focus (breast cancer screening, cardiovascular health, prostate cancer screening, tobacco cessation) but shares a multimodal approach to

Table 2. Preventive health knowledge and behaviors of African-American and Afro-Caribbean women in Brooklyn, June 2004

	N (%)	Participants Born in the United States (n=110)	Participants Born in the Caribbean (n=91)	Participants Born Neither in the United States nor the Caribbean (n=20)
<i>Domain: Second Hand Smoke and Asthma</i>				
Which of the following might cause an asthma attack?				
1. Cigarette smoking	216 (97%)	109 (97%)	87 (97%)	14 (88%)
2. Pipe smoking	202 (92%)	99 (88%)	88 (98%)*	15 (94%)
3. Smoke that is exhaled	192 (89%)	97 (86%)	83 (92%)	14 (88%)
What can you do to protect your family from the perils of secondhand smoke and asthma?				
4. Give up smoking	179 (80%)	84 (74%)*	81 (90%)*	13 (81%)
5. Sit in non-smoking areas in public places	173 (77%)	84 (74%)	76 (84%)*	11 (69%)
6. Declare your home and car smoke-free	180 (81%)	89 (79%)	74 (82%)	15 (94%)
7. Encourage the implementation of smoking policies in organizations that deal with children	145 (65%)	71 (63%)	63 (70%)	11 (69%)
<i>Domain: Sexual Health</i>				
What are some ways of reducing your chances of contracting sexually transmitted diseases?				
8. Use condoms	206 (92%)	104 (92%)	85 (94%)	14 (88%)
9. Be monogamous	146 (66%)	79 (90%)	56 (62%)	7 (44%)*
10. Ask questions of partners	176 (77%)	94 (83%)*	63 (70%)*	13 (81%)
<i>Domain: Heart Health</i>				
Which of the following might cause heart disease?				
11. High blood pressure	189 (85%)	101 (89%)	76 (84%)	14 (88%)
12. Obesity	188 (84%)	92 (81%)*	82 (91%)*	14 (88%)
13. Lack of exercise	163 (73%)	79 (70%)	56 (62%)	13 (81%)
14. High blood cholesterol	193 (87%)	94 (83%)	83 (92%)	12 (75%)*
15. Cigarette smoking	166 (74%)	86 (76%)	69 (77%)	11 (69%)
If you are overweight, what can you do to change it?				
16. Exercise regularly	207 (93%)	105 (93%)	83 (92%)	12 (75%)*
17. Reduce fat intake	198 (89%)	98 (87%)*	84 (94%)	15 (94%)
18. Go on a diet	196 (88%)	99 (88%)	80 (89%)	15 (94%)
19. Reduce stress	127 (57%)	60 (53%)	58 (64%)	10 (63%)
20. Eat more vegetables	164 (74%)	77 (68%)	71 (79%)*	10 (63%)

health education. Program components include both live and video presentations, and some programs train stylists to deliver health-promotion messages. Presentations describe health consequences for certain behaviors and risk factors for certain diseases and then explain how to avoid them.

In June 2004, AAIUH sought to measure the existing level of knowledge about the symptoms and risk factors of heart disease, breast cancer, high blood pressure, asthma, sexually transmitted diseases and high blood cholesterol in its target population of African-American and Afro-Caribbean female customers of beauty salons in central Brooklyn. Through this cross-sectional study,

AAIUH seeks to provide insight about health-related beliefs and behaviors that may contribute to health disparities in African-American and Afro-Caribbean women, and better tailor its program to community needs.

METHODS

Study Population

Survey participants were customers recruited from the reception areas of beauty salons located in the Bedford Stuyvesant, Crown Heights, East New York and East Flatbush/Flatbush communities of central Brook-

Table 2. continued

	N(%)	Participants Born in the United States (n=110)	Participants Born in the Caribbean (n=91)	Participants Born Neither in the United States nor the Caribbean (n=20)
<i>Domain: Prostate Health</i>				
What are the symptoms of prostate cancer?				
21. No symptoms	53 (24%)	26 (23%)	21 (23%)	4 (25%)
22. Difficulty urinating	144 (65%)	67 (59%)	65 (72%)*	10 (63%)
23. Pain while urinating	149 (67%)	71 (63%)	64 (71%)	8 (50%)
24. Frequent need to urinate	140 (63%)	60 (53%)	76 (78%)**	7 (44%)
What are the two tests that can be used to detect prostate cancer in the early stages?				
25. PSA	103 (46%)	53 (47%)	46 (51%)	4 (25%)
26. Digital Rectal Exam	137 (61%)	61 (54%)	64 (71%)	7 (44%)
27.X-Ray (Wrong Choice)	85 (38%)	43 (38%)	37 (41%)	4 (25%)
<i>Domain: Breast Health</i>				
What are the symptoms of breast cancer?				
28. Breast lump	214 (96%)	109 (97%)	88 (98%)	15 (94%)
29. Sore/rash on nipple	110 (49%)	49 (43%)*	56 (62%)**	6 (38%)
30. Nipple discharge	144 (65%)	62 (55%)**	73 (81%)**	8 (50%)
31. Breast pain	159 (71%)	74 (66%)**	72 (80%)**	9 (56%)
32. Change in size of the breast	113 (51%)	55 (48%)	56 (62%)**	7 (44%)
33. Swelling of the breast	124 (56%)	61 (54%)	53 (59%)	13 (81%)*
34. Dimpling of the breast	120 (54%)	53 (47%)*	54 (60%)	9 (56%)
<i>Domain: Health Behaviors</i>				
Do you currently smoke?	39 (18%)	22 (20%)	15 (17%)	1 (6%)
Have you received a mammogram within the past year?	42 (52%)	56 (61%)	54 (60%)	8 (50%)
Have you conducted a breast self-exam within the past month?	67 (83%)	101 (90%)*	70 (78%)	11 (69%)
Have you had your breasts examined by a doctor or nurse within the past year?	73 (90%)	108 (97%)**	83 (92%)	12 (75%)
Have you referred a partner or a close male relative for prostate screening?	93 (43%)	54 (48%)	35 (40%)	4 (25%)
Do you exercise regularly?	170 (77%)	90 (84%)	68 (76%)	11 (69%)
Have you checked your blood cholesterol level within the past year?	169 (77%)	84 (77%)	71 (80%)	12 (75%)
Have you checked your blood pressure in the past year?	212 (96%)	108 (96%)	87 (98%)	14 (88%)
Do you use a condom when you engage in sexual activity?	40 (27%)[4]	30 (37%)	24 (43%)	7 (44%)

lyn. As noted earlier, these areas form the target service neighborhoods for AAIUH initiatives, and are ethnically and culturally diverse communities.

Salon Selection

Initially, 160 salons were selected from the 602 listings for barbershops and beauty salons in *The Yellow Pages* for that community. Salons were then visited by a AAIUH staff member who evaluated the establishment on the following criteria: 1) shop activity level—average number of customers per day, 2) ethnicity and age of clientele and stylists, 3) license status of the shop, 4) number of stylists employed by the shop, 5) culture and friendliness of the shop's atmosphere, 6) presence of a television and/or VCR at the shop, and 7) the interest of the shop's owners in participating in the AAIUH's health-promotion initiatives.

Only those salons with ≥ 3 stylists, substantial customer activity (≥ 30 customers daily) valid licenses and interest in AAIUH's health-promotion programs were invited to participate.

Ten salons were chosen through convenience sampling of the preselected 160 salons. Due to time and resource constraints, a convenience-sampling strategy was utilized; a random-sampling scheme would not have been feasible due to the substantially longer period of data collection required to reach the minimal sample size specified by power analysis.

Five out of the 10 personal-service establishments sampled in this study previously participated in AAIUH's Soul Sense of Beauty program, a breast cancer screening and education initiative. However, this participation ended two years prior to the onset of this study, and respondents were not exposed to an intervention during the course of the study.

Participant Recruitment

Every female adult customer who walked through the salon door was invited to participate in the trained volunteer-administered survey. Participants were required to be ≥ 18 and were excluded if they had previously participated in this survey at other salons.

Survey Instrument and Scoring of Responses

Each respondent was asked to fill out a 42-item questionnaire (Cronbach's $\alpha=0.76$) with five main domain areas: heart health, breast health, second-hand smoke, asthma and sexual health. The instrument included 32 knowledge questions and 10 items on preventive behaviors. The instrument was developed from a series of subscales previously created by AAIUH; all questions were field tested before inclusion. This instrument was administered by trained volunteers. With the salon owner's consent, trained volunteers from AAIUH queried customers waiting in the shop's reception area

between Tuesday and Saturday. All responses were kept anonymous, and no personal identifiers were recorded.

The participants' level of health knowledge was measured by their ability to correctly identify the symptoms of breast cancer and prostate cancer as well as the risk factors for asthma, heart disease and sexually transmitted diseases. Respondents' health behaviors were queried (smoking, regular use of condoms and prophylaxis, blood pressure checked within the past year, blood cholesterol checked within the past year, regular exercise, referral of partner for prostate screening, clinical breast exam within the past year, monthly breast self-exams, annual mammograms). Respondents also were asked about their family history of certain chronic diseases, particularly whether their mother or father had breast cancer, asthma, heart disease and/or prostate cancer.

Data Analysis

Descriptive statistics for responses to the demographic, knowledge and behavioral questions are presented as frequencies (%). An overall score for participant's level of health knowledge was obtained by summing the number of correct responses, with a maximum total score of 27. As prostate cancer does not directly affect women's health, the items related to screening for prostate cancer were omitted in the calculation of the total score in the interests of improving the internal validity of the scale.

Participants' overall level of health knowledge is described as mean \pm standard deviation. Student's *t* tests and analysis of variance (ANOVA) were used to determine which factors and outcomes were associated with level of health knowledge. The Chi-squared test was used to explore categorical predictors of health-related behaviors. Multiple regression was then used to explore multiple indicators associated with level of health knowledge (continuous outcome), while logistic regression was used to explore multiple indicators of health-related behaviors (dichotomous outcome). SPSS 13.0 (SPSS Inc., Chicago, IL) was used to analyze the data.

RESULTS

Sample Characteristics

Two-hundred-twenty-one females in 10 salons in Brooklyn were surveyed in mid-June 2004. Participants ranged in age from 18–70+, although most (85%) of the sample was age < 50 . Most participants were single (54%), but a significant minority (33%) were married and/or living with a partner.

Participants had a fairly high educational level; 91% of the sample consisted of high-school graduates or higher, and 29% of the participants had graduated from college. The majority of the sample had health insurance, with most reporting HMO/HIP managed care (26%) or other (33%) types of health insurance. The

sample was split between U.S.-born (49%) and Caribbean-born (47%) individuals. Most of the participants lived in the East Flatbush (37%) or Bedford-Stuyvesant (29%) area. Most of the participants reported a family history of asthma (61%), heart disease (27%), breast cancer (26%) or prostate cancer (20%).

Knowledge Scores

In general, participants exhibited a high level of knowledge about disease symptoms and health behaviors. The mean knowledge score was 20.27 ± 5.51 ; scores ranged from 6–27.

As noted earlier, five out of 10 salons had previously participated in Soul Sense of Beauty, a breast cancer screening and education initiative. Though the participation ended two years before the onset of this study, respondents' scores on the breast health portion of the knowledge test may have been higher due to potential previous participation in Soul Sense of Beauty. However, despite the hazard, certain items within the breast health (swelling of the breast, change in size of the breast, nipple discharge) were answered incorrectly by nearly half of the sample, as indicated in Table 2. In addition, participants had difficulties with other domains, such as prostate health (methods for diagnosing prostate cancer), sexual health (monogamous behavior) and heart health (stress reduction).

About one in five (22%) respondents received a high score (≥ 25), while 57 (26%) participants received a low score (below 17). Table 1 provides a comparison of high scorers and low scorers by various demographic characteristics. More than half (65%) of the females ages 30–49 were high scorers. Almost half (40%) of the respondents who belonged to an HMO were high scorers, and 88% of those who had either attended or graduated from college were high scorers. Sixty-one percent of Caribbean-born respondents were high scorers. Logistic regression analyses (results not reported) revealed that foreign-born respondents were two times more likely to receive a high score than an average score, and that respondents with no insurance were two times more likely to be receive a low score than an average score.

Three demographics factors were significantly relat-

ed to higher knowledge of disease scores (Table 3): a family history of heart disease ($p=0.035$); a family history of prostate cancer ($p=0.032$) and being a member of an HMO ($p=0.001$). Having a family history of either heart disease or prostate cancer was also significant ($p=0.018$). Regressing knowledge scores onto HMO membership and having a family history of heart disease/prostate cancer showed that these two factors were independent predictors of knowledge scores ($p=0.002$ for HMO membership; $p=0.024$ for family history of heart disease/prostate cancer).

Knowledge about disease symptoms, in turn, was related to two health-related behaviors: not currently smoking ($p=0.049$) and going for a blood cholesterol screening in the past year ($p=0.049$). Exploration of other factors related to either smoking or having a cholesterol test showed that only marital status had a significant association with smoking ($p=0.029$). A logistic regression that included both marital status and knowledge scores as predictors of smoking showed that single respondents were more likely to smoke than widowed respondents (89% vs. 5%, $p=0.025$). Knowledge score was still significant after controlling for marital status ($p=0.027$).

Despite having an overall high level of knowledge about the symptoms and risk factors for most conditions, a large percentage of the sample engaged in high-risk behaviors. About one in five (18%) of the participants reported smoking, including 16% of those with a family history of asthma. Almost half (48%) of women aged ≥ 40 have never had a mammogram. Few respondents encouraged family members to get screened for prostate cancer (41%), and an even smaller percentage of women not in a monogamous relationship reported using a condom (27%) regularly (data not shown).

DISCUSSION

Overall levels of health knowledge were high in the population of African-American and Afro-Caribbean women, although uneven through the five studied domains. Many respondents correctly identified most of the risk factors for asthma, breast cancer, heart disease and sexually transmitted diseases. The all-female partic-

Table 3. Demographic factors and health behavior related to knowledge of preventive health behaviors among African-American and Afro-Caribbean women in Brooklyn, June 2004

	Yes	No	p Value
Family history of heart disease	21.84 \pm 5.86	20.09 \pm 5.31	0.035
Family history of prostate cancer	22.20 \pm 5.24	20.21 \pm 5.54	0.032
Family history of either heart disease or prostate cancer	21.60 \pm 5.74	19.83 \pm 5.23	0.018
Member of HMO	22.61 \pm 4.73	19.88 \pm 5.60	0.001
Smoking	19.00 \pm 6.54	20.91 \pm 5.22	0.049
Blood cholesterol test in past year	20.95 \pm 6.54	19.18 \pm 6.43	0.049

* $p < 0.05$

ipant group, however, fared more poorly in identifying the risk factors for prostate cancer. More than half the sample (67%) listed pain while urinating and frequent urination (63%) as symptoms, but only 28% correctly identified the tests used to screen for prostate cancer.

This is particularly important given the high incidence of prostate cancer among black immigrant populations and the frequent role of the woman as gatekeeper for a family's health.²¹

Respondents had difficulty identifying nipple discharge, change in size of the breast, swelling of the breast, dimpling of the breast, and a rash or sore on the nipple as symptoms of breast cancer. This suggests that the breast health curriculum of the Black Pearls program may need to be modified to impart these messages more effectively to participants.

Another finding was that despite high knowledge scores, individuals do not necessarily report engaging in healthy behaviors. For instance, only 47% of women aged ≥ 40 reported receiving a mammogram within the past year. Given the increased vulnerability of this population to early onset and more aggressive breast cancer, this is cause for concern. A majority of the sample has health insurance, so lack of access to care seems an unlikely culprit, although there could be issues with risk perception, fatalistic attitudes, competing priorities, and other nonfinancial disincentives to acquiring regular care.^{22,23}

Finally, knowledge about disease symptoms was significantly related, on one hand, to family history of heart disease and prostate cancer as well as being a member of an HMO. Knowledge about disease symptoms were also a significant predictor of two health-related behaviors—not smoking and being tested for cholesterol. Personal experience of a family member with a serious condition such as heart disease or prostate cancer may make individuals more sensitive to factors related to chronic illnesses in general. Moreover, being a member of an HMO, which often requires selecting a plan, a physician or clinic, may require individuals to be better informed about health. This knowledge, in turn, may be implicated in their choice of health-related behaviors. These are factors to consider incorporating into programs designed to encourage health-related behaviors among individuals in a community.

This study has several limitations, including the convenience sample and the self-reporting of certain behaviors (exercising, eating nutritiously), which has been shown to be less than valid in previous studies.²⁴⁻²⁷ Also, a danger of a “ceiling effect” (a high frequency of correct responses) exists. The collection of additional qualitative data on the respondents' emotions and beliefs would provide a richer source of data for analysis. Other researchers have reported psychological impediments, such as fatalism and fear, in the Haitian- and English-speaking Caribbean population as barriers to practicing certain preventive behaviors, including screening for

cancer.²⁸ It is unknown, however, what effect this may have on the adaptation of preventive behaviors such as regular cardiovascular exercise and healthy eating.

CONCLUSION

Intervention efforts should be targeted at educating participants about lesser-known symptoms and risk factors for heart disease and breast cancer, and they should focus on moving people from knowledge and understanding to behavioral change. More qualitative work must be done with the population to examine the barriers that respondents face in their attempt to integrate healthy behaviors into their daily lives.

ACKNOWLEDGMENTS

We are grateful for the support of Northwest Survey Data; Luz Claudio, PhD; and Elizabeth Boesky, PhD.

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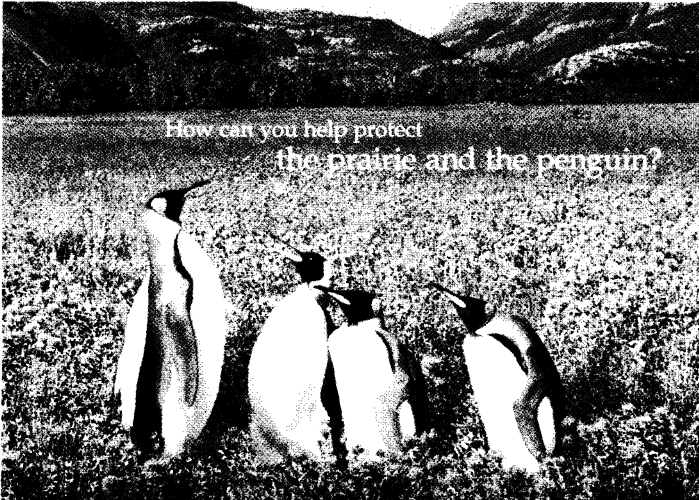
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