Evidential preferences: cultural appropriateness strategies in health communications

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Abstract

While there is widespread agreement that communication programs and materials will be more effective when they are ‘culturally appropriate’ for the populations they serve, little is known about how best to achieve this cultural appropriateness. The specific strategies used to realize the potential of culturally appropriate communication take many forms. This paper discusses an approach to assessing and understanding the presentation of statistical information (an evidential strategy) to enhance the perceived relevance of communications targeted to older African American men and women. Formative research on African Americans’ attitudes and knowledge of colorectal cancer explored preferences for presentation of statistical data. Focus group interviews elicited participants’ (n = 49) thoughts and attitudes on and anticipated behavioral response to five strategies for presenting cancer data and evidence—general, race specific, disparity, social math and framing ~5-year probability of death or survival. A description is provided of the application of this approach to the development of a colorectal cancer campaign for African Americans. This strategy may prove useful in understanding and structuring the presentation of targeted cancer evidence that could result in more effective health communication.

Introduction

Disparities in cancer are well documented among African Americans [1–3]. African American men have the highest incidence and mortality cancer rates for all sites combined as well as for prostate, lung, colorectal and other cancers. Breast cancer mortality rates are 30% higher for African American women compared with White women despite lower incidence rates [1, 2]. Both incidence and mortality rates for colorectal cancer are higher among African American women than other groups of women [3]. The effective use of social and cultural constructs to communicate about health and health behavior change may be an important step in health disparity reduction.

As suggested by previous authors [4], a cultural perspective allows us to examine how membership in a specific group influences an aspect of life such as health, including differential health outcomes or ‘disparities’. Culturally appropriate communication may provide an important opportunity to address health disparities, but the specific strategies used to realize this potential can take many forms. While there is widespread agreement that communication programs and materials will be more effective when they are ‘culturally appropriate’ for the populations they serve [5–7], little is known about how best to achieve cultural appropriateness.
To help fill this gap, this research examined preferences for presentation of race-specific evidence about colorectal cancer among African American men and women. Focus group interviews elicited participants’ thoughts and attitudes and anticipated behavioral response to five strategies for presenting cancer information—general, race specific, disparity, social math and framing; 5-year probability of death or survival. For each of these five strategies, we sought to learn (i) the strengths and weaknesses of presentation formats, (ii) how presentation affected memory for and understanding of the information and (iii) whether men and women might respond differently to evidential statements. If effective, this strategy could prove useful in structuring the presentation of cancer evidence in health promotion campaigns that target African Americans.

**Background/literature review**

Health communication researchers [8, 9] have described five basic approaches currently used to achieve cultural appropriateness in targeted health communications: constituent involving, peripheral, linguistic, sociocultural and evidential. ‘Constituent involving’ strategies are one of the more straightforward activities to increase cultural competency. This process involves the inclusion of members of the community in intervention activities as advisory board members or intervention staff, whether they are trained as paraprofessionals or act as natural helpers. ‘Peripheral’ approaches seek to enhance effectiveness of communication by packaging content in colors, fonts, images, photographs or declarative titles (e.g. A magazine for African Americans) likely to appeal to a given group. Previous authors [9] described ‘linguistic’ strategies as one of the more basic elements of the attempt to make health education programs and materials more culturally sensitive. This strategy makes materials accessible by providing them in the native or dominant language of a group. These materials may be produced for a specific health promotion activity or translations of existing materials. ‘Sociocultural’ approaches discuss disease in the context of specific social and/or cultural characteristics of the group. The final approach to culturally relevant health education materials uses evidence and is the focus of this paper.

‘Evidential’ approaches [8] provide and discuss data specific to a group (e.g. between 1973–92, colorectal cancer in African American men increased 40%). While most evidence used in health promotion is statistical, it need not be. Testimonials and statements related to personal, family or group experience can also be used as a form of evidence. Evidential statements seek to raise awareness, concern and/or perceived personal vulnerability to a health concern by showing that it affects others similar to members of the target audience. Research has suggested that the perception that a problem affects others ‘like you’ can increase thinking about the problem, the decision to engage in prevention and planning to do so [10]. In a recent review of injury prevention intervention studies conducted among racial or ethnic minority populations, evidential approaches to cultural appropriateness were used less frequently than any of the other four strategies [11].

Previous research [12] has confirmed the importance of presenting risk factor information when informing men and women age 50 years and over of the risks of colorectal cancer. Presenting risk information increased perceived risk without increasing worry, fear or anxiety. Additional research [13] has explored the presentation of evidence in cancer communications targeting African American and Hispanic women. These authors evaluated response to four risk communication formats. The data seemed to suggest a preference for information about family history and personal risk that was provided in graphic and quantitative forms.

Despite these studies, relatively little is known about African American preferences that influence responses to risk communication formats or health statistics in health promotion programs. To address this issue, one component of the formative research for this African American colorectal cancer education campaign sought to learn from members of the community how best to present statistical forms of evidential statements. The current study used focus groups to accomplish this goal.
Focus groups are defined as semi-structured groups moderated by a group leader in informal settings in order to collect information from individuals believed to share common characteristics and experiences [14]. Focus groups allow respondents to exchange opinions on topics and build on or disagree with the ideas shared, thus providing an opportunity for the observation of diverse perspectives. This methodology was selected for several reasons. First, there are limited data on African American preferences for the presentation of statistical data [15]. Focus groups are useful in understanding the response to prevention messages, such as the evidential statements considered for inclusion in the larger intervention program. This qualitative strategy also permits consideration of the meaning of evidential statements, discussions that can reveal how these develop within groups, as well as suggestions for alternative content [15, 16]. Because of these characteristics, focus groups have the ability to provide rich information that is useful in developing program and intervention strategies [17].

Using Weinstein’s Precaution Adoption Process Model [10], we selected five strategies for presenting cancer statements: (i) general statistical data, (ii) ethnic-specific statements, (iii) statements that highlighted disparities, (iv) social math examples and (v) framing 5-year probability of death or survival. This model suggests that convincing someone that a risk affects people like him or her is important in moving them toward precautionary action. Providing race-specific data or disparity data may be one way to accomplish this goal. In addition, data can only be motivating if it is understood and perceived as meaningful. Thus translating abstract data into concrete terms (i.e. social math) may facilitate understanding. Framing data in terms of survival or death has the ability to stimulate hope or fear and therefore is important to decisions about the presentation of statistical data.

This article describes the process of examining focus group data to address (i) the level of cancer concern in the target community, (ii) how evidential issues are understood and experienced by African Americans in the context of cancer, (iii) reactions to cancer communication prototypes and (iv) the use of these findings to develop a set of recommendations to guide the communication materials developed. It is believed that this strategy permits the development of targeted health communications that effectively address the information deficits and preferences of the African American community.

**Methods**

**Focus groups**

This study was conducted as part of a larger intervention trial to increase colorectal cancer screening among African Americans. The formative research for the larger study included focus groups, key informant interviews, cognitive response testing and surveys. An African American woman conducted each of the focus groups, using a standardized script to guide each group discussion. A notetaker, whose race varied, was present at each group. A multidisciplinary research team composed of three psychologists, an anthropologist and three public health practitioners developed the focus group script. The script permitted exploration of respondents’ reactions and thought processes when exposed to different presentations of cancer data. These presentations consisted of varied types of statistical statements about cancer.

In these 90–120 min group interviews, respondents read statements providing cancer statistics. Statements were presented using an easel, with one statement appearing on each page. After the moderator read each statement aloud, the focus group discussions explored the statements’ understandability, effect on memory, relevance, ability to promote behavior change and participant statement preferences. All sessions were audiotaped and each session’s audiotape was professionally transcribed verbatim. In addition, an assistant and the focus group moderator completed detailed field notes that included the location of the focus group, attendees, observations, analytic ideas and personal impressions shortly after each focus group.

**Participants**

Researchers used a purposive sampling technique to recruit participants. Study participants were (i) age
39 years and older, (ii) with no known diagnosis of colorectal cancer, (iii) born in the United States and (iv) residents of the metropolitan area to be targeted by the intervention. There were six focus groups with 32 African American men and three focus groups with 17 African American women. Researchers sought more input from men because of access to data from prior work with African American women in the Health Communication Research Laboratory [18], and the need for data on the preferences of African American men. Participants were recruited via posted announcements, personal invitations through churches and solicitations at local businesses. Participants received a 20-dollar gift certificate for their participation.

**Procedures**

The Saint Louis University Institutional Review Board approved the research protocol. Nine, sex-specific, focus groups were conducted between June 2004 and August 2004 with 49 African American respondents. Focus groups were held at several public venues in the community. These venues included a public library, a municipal city hall, a church, a University-based facility and on the Neighborhood Voice Mobile Van (a van customized to facilitate community recruitment and community-based research) and were selected based on ease of access.

All participants received a detailed explanation of the study before providing signed consent. Study participants completed a demographic questionnaire that obtained information on sex, age, educational level and income before group discussions. Cancer statements were then presented in the following order: (i) general statistical data, (ii) ethnic-specific statements, (iii) statements that highlighted disparities, (iv) social math examples and (v) framing; 5-year probability of death or survival. Evidential statements referenced statistics that were obtained from the American Cancer Society or National Cancer Institute Web sites. General statements, unlike ethnic-specific statements, did not comment on cancer or colorectal cancer in specific racial or ethnic groups. Disparity statements highlighted differences in mortality, comparing African Americans to White Americans. Previous authors [19] have described social math statements as attempts to place cancer statistics in a meaningful social context that increased the readers’ perception of the personal relevance of the information. Finally, statements that addressed data on cancer mortality and survivorship were presented. (See Table I)

**Data analysis**

Six researchers (a psychologist, an anthropologist, an epidemiologist and three other public health practitioners) were responsible for developing rules and categories for identifying and recording content. These rules and categories were developed after reviewing project goals, the content of the focus groups and the existing literature (see Table II). Ten codes addressed specific responses to the statistical presentations. These codes addressed preference, relevance, understanding, memory, reactions to comparisons and attitudes related to survival and mortality. There were three statement types coded: anecdotes, general attitudes or beliefs and statements specific to the statistical presentations. Demographic references permitted an analysis of whether responses were related age, gender, socioeconomic status or racial issues (see Table II).

Eight individuals participated in the actual data coding, analysis and interpretation. Two person data coding teams were established and trained to use the coding categories and rules. Each coder read and coded each transcript and then met with their partner to review codes and discuss any discrepancies until reaching consensus. If coders did not reach consensus, the project principal investigator made the final coding decision. Upon completion of coding, team members individually formulated core ideas and general themes for sex-specific focus groups. The sex-specific coding teams met to discuss the core ideas and general themes generated. The discussions yielded a set of attitudes about cancer, information needs and concerns and reactions to and preferences for the presentation of statistical information. In the final step, the sex-specific set of attitudes, concerns and reactions to and preferences
Findings

The mean age for the sample was 51.3, with a mean age of 53.6 for women and 48.9 years for men. Approximately 56% of participants, 47% of men and 65% of women, had at least some college. However, 62% of participants reported a current income <$20 000. Approximately 70% of men and 53% of women were in the <$20 000 income range (see Table III for demographic data).

Views of cancer

Initial queries about health concerns in the African American community suggest that other chronic illnesses occupied the minds of African American respondents. Cancer represented 10% of the 115 mentions of illnesses of concern. Hypertension (22.3%) and diabetes (16.5%) were most often discussed, with human immunodeficiency virus/acquired immunodeficiency syndrome (10.7%) and cancer discussed at similar rates. Despite the lack of focus on cancer, most respondents viewed cancer as a serious health concern and equated a cancer diagnosis with death. ‘Cancer is scary enough by itself, to get you or get your ticket … It’s about death’.

Responses to general statistics

There were few differences between men and women in preferences for cancer statistics.

Both men and women wanted more information specifically about African Americans. Respondents felt that group-specific statistics were more likely to capture the attention of the intended audience. ‘… people relate more to how it will affect them, as opposed to the information in general’. Respondents indicated that they did not respond to data communicated using terms such as ‘approximately’ or ‘estimates’, etc. ‘Right. If you are going to estimate it, that’s like someone read your meter, or something and it’s estimated, they’re not sure’. They also felt that these terms suggested poor data quality and sources that were disreputable and untrustworthy. In addition, respondents wanted statistical statements paired with information on the signs and symptoms of cancer and recommendations for behavior changes that would reduce risk of and harm from cancer.

The media and physicians were reportedly trusted sources of information, as was the American Cancer Society. In addition, participants were more likely to report trust when evidential statements were consistent with their personal experience and verbalized doubt when the two were inconsistent.
Responses to ethnic-specific statements

Respondents reported that ethnic-specific statements, ‘Colorectal cancer is the second leading cause of cancer deaths among African Americans’, promoted a sense of the relevance of the issue for them and a sense that the statement was of concern to the group. ‘… I don’t see it as a black white issue, but … I am concerned about all people. But what is close to me are those that are like me. So I have to be concerned about them’. Race-specific data tended to stimulate questions and discussions about the general state of African Americans’ health. Some of these discussions focused on African American health outcomes when compared with other racial and ethnic groups and resulted in a variety of explanations, including lack of information, costs and lack of health insurance.

Disparity discussions were furthered when statements that highlighted disparities, ‘African Americans have a 33% higher risk of dying from cancer than Whites’, were introduced. These statements generated negative emotions and mistrust of the sources providing the information. ‘They probably don’t know anything about us Blacks.’ ‘They just going by something in their own mind …. ’ These discussions also referenced experiences of discrimination in the health care system. Participants noted that the statistics given did not explain why cancer incidence and mortality were so high in the African American community, particularly when compared with rates for Whites. They also wanted explanations and suggestions for actions that might improve the situation. ‘Why is it so much higher in our populace than it is in Whites? Why is it that it affects us more than it does the Whites? Um, how can we prevent it?’

Participants discussed whether African Americans had access to health information and knowledge that could reduce differences in health outcomes. Even participants with health insurance noted that economic issues among African Americans limited access to many resources:

Male: Well I think it’s that the black people don’t have good knowledge as the White people know. … I just think it’s higher because that we’re poor
and we just don’t understand the situation. I like the comparison because it’s, because it lets me know that in my racial and ethnic group it’s much higher than it is, um, in Whites and it, and it forces me to ask the question, why? Why is it higher?

Female: Um, it’s not right. It’s just that African Americans don’t have all that insurance. Maybe them Whites can afford to go to the doctor sooner than we can. You know, we just stay home …

Respondents’ expressed concerns about data when they did not understand the source and method of data collection. Given the tendency for the data and statistics to be negative, participants wondered if someone made up unfavorable data. Participants suggested that they had more confidence is statistics when they knew more about the source and how data were obtained. ‘You have to also look at who is making the survey’.

Focus group participants stated that they wanted statistical comparisons to include information related to other ethnic and racial groups besides their White counterparts. Information was reported as more reputable when comparisons included other groups whose plight in this country was similar to that of African Americans. ‘African Americans to Hispanics. I think Hispanics are in the same group that we are, blacks are. They got no benefits at all’.

Respondents reported that these data were important in determining how they should respond to disparity statements and could increase their motivation to change their behaviors. Respondents also suggested the inclusion of socioeconomic and gender-specific information; men were particularly interested in these data.

### Social math

Social math examples assisted in the visualization of statistical statements. Participants reported that social math presentations of statistics were more likely to affect behavior change, as they appeared more personal. Approximately 80% of participants indicated a preference for the family-related social math presentation, while only 60% expressed a preference for the sports-related statement (Imagine that all the people diagnosed with cancer in a given year are in the same place at the same time. They could fill every seat in the Rams football stadium … twice!). The role of family in statistical presentations, ‘Imagine yourself and two family members. One of you is likely to be diagnosed with some form of cancer during your lifetime’, strongly influenced preferences for social math examples among women. When social math statements were not preferred, participants indicated that general statements on cancer were easier to remember because of the large numbers. Preferences among men were less clear but social math examples received a slightly more favorable response:

Male: [This statement] will probably feel more, feel more personal because now I’m thinking about, um, two other siblings and myself and

| Table III. Summary of participant demographics by gender (n = 49) |
|---|---|---|
| | Total | Men | Women |
| n | 49 | 32 | 17 |
| Age | 51.3 (7.4) [39–71] | 48.9 (5.2) | 53.6 (8.4) |
| Income (values in %) | | | |
| <10 000 | 41.2 | 41.2 | 41.2 |
| 10 000–19 999 | 20.6 | 29.4 | 11.8 |
| 20 000–29 999 | 17.6 | 17.6 | 17.6 |
| 30 000–39 999 | 8.8 | 5.9 | 11.8 |
| 40 000–49 999 | 5.9 | 0.0 | 11.8 |
| 50 000–59 999 | 2.9 | 0.0 | 5.9 |
| 60 000–69 999 | 0.0 | 0.0 | 0.0 |
| 70 000–79 999 | 0.0 | 0.0 | 0.0 |
| 80 000–89 999 | 0.0 | 0.0 | 0.0 |
| 90 000–99 999 | 2.9 | 5.9 | 0.0 |
| Education (values in %) | | | |
| <Higher secondary | 2.9 | 5.9 | 0.0 |
| Some higher secondary | 23.5 | 17.6 | 29.4 |
| Higher secondary graduate/General Education Development Test | 17.6 | 29.4 | 5.9 |
| Some college | 38.2 | 35.3 | 41.2 |
| College graduate | 11.8 | 0.0 | 23.5 |
| >Some graduate | 5.9 | 11.8 | 0.0 |

[] = range.
one of us is going to come up with cancer, so it’s a lot more personal.

Female: … Um, we never want to actually think about someone we love being diagnosed with cancer. But, if it is absolutely necessary, I just need to know what I can do for them or myself. You know, and that would make me remember more.

Men who disliked social math examples were also more likely to express doubt about the statements.

**Framing**

All participants had difficulty understanding 5-year probability of survival, ‘90% of the people diagnosed in the early stages of colorectal cancer survive at least 5 years’, and framing ‘5-year probability of death, ‘10% of the people diagnosed in the early stages of colorectal cancer die within 5 years’. The discussion of 5-year survival rates seemed most responsible for the confusion. However, ~65% of participants expressed a preference for framing around the 5-year probability of survival. Although there was no consensus, participants generally described this frame as more memorable and relevant for participants, while framing ‘5-year probability of death held the possibility of behavior change due to fear:

Male: I would agree with the positive, with the ninety percent. The high, the high, um, if, if you were saying like, there would be some benefit to going to check … the ninety percent, as opposed to ten percent saying, if you don’t do this, you in the ten percent of them.

Female: Well I always go on the side of the survivor. And if that means changing something, then okay, it’s simpler to do. … Because they aren’t talking about dying, they’re talking about living.

**Discussion**

Weinstein’s Precaution Adoption Process Model suggests that convincing someone that a risk affects people like him or her is important in moving them toward precautionary action [10]. Providing race-specific data or disparity data might be expected to have this affect. In the current study, general statistics did little to stimulate motivation; race-specific statements stimulated thinking and discussion and disparity data did as well but also led to skepticism and mistrust. Social math aided understanding and was perceived as motivating, and framing ‘5-year probability of death or survival was confusing.

While Royak-Schaler et al. [13] builds a case for the development of culturally specific tools, our findings provide specific strategies toward improving the efficacy of these methods. This study sought to add to the knowledge base related to the culturally appropriate presentation of evidence by obtaining community input that would allow increased understanding of what statistical data should be included, its potential impact (intended and unintended) and the possibility that it would be remembered and used. The data presented appear to support views that cultural appropriateness can enhance perceived relevance and thus the willingness to process health communication [5–8, 10]. In addition, these data suggest that the strategy for presenting evidence [8] is an important component of cultural appropriateness.

Several of our findings are consistent with those of previous researchers. In general, participants suggested the need to provide communications that made use of ethnic-specific data. This finding is in line with past research that notes the appeal of health information that depicts members of the targeted group [7, 8]. Participants in our study commented further on the preference for data on African Americans’ risk of cancer combined with strategies to improve personal and community health. This response is consistent with findings from the literature on fear appeals [20].

In previous research [13], African Americans preferred statistical data in graphic form. While this study did not present data in graphical formats, we noted that participants preferred statistics that were easy to visualize. In addition, family risk information was important to participants in previous work [12] and social math examples that referenced
family were important to our participants. This may relate to the importance of family in the African American community.

Ethnic-specific data that provided statistical comparisons seemed capable of producing positive and negative responses. Participants’ discussions suggested that awareness of disparity motivated a desire to change behavior, but resulted in questions about the motives of the organizations and individuals responsible for the data. Participants wanted statistical comparisons to include non-White ethnic and racial groups, whose plight in this country seemed similar. The transmission of more positive health information and data presented using a survival frame seemed to offer the opportunity to decrease the sense of hopelessness, frustration and mistrust that negative statistics and information sometimes produce. In addition, it seemed to have some value as it relates to memory and relevance.

An interesting, although not a central, finding was the importance of media as a source of health information. Our participants identified the media as a trusted source of health information equating its value in providing health facts with that of physicians. Data from this study are consistent with the observation of African Americans’ continued reliance on television and print media as sources of information, even as other groups migrate to the Internet [21]. Familiarity and ease of access may explain continued use, but the issue of trust is more complicated. Future research might examine whether the information remembered and used is linked to offerings with ethnic themes, thus increasing it perceived credibility or relevance. Despite the need for additional research, these findings are promising. The use of popular media to transmit relevant health messages may help to overcome the mistrust of other social and governmental organizations that impedes acceptance and use of health information.

Limitations

Researchers and health educators should carefully consider the limitations of these focus group discussions when considering their utility in other settings and populations. A limitation of this study relates to the stimuli presented to participants for response. With the exception of the social math examples, the statements representing the major strategies examined, framing and ethnic-specific statements, were limited to two examples each. In addition, among the ethnic-specific statements one statement provided a general statement and the second focused on cancer disparities. While it is inappropriate to assume that the responses of focus group participants to this limited sample of statements allows us to draw conclusions about the entire class of statements, the data are suggestive of directions for future research.

While an African American led all focus groups, the sex of the facilitator may have influenced participant response. African American men may have withheld some responses in the presence of an African American woman. In addition, race was not constant among the notetakers. It is possible that, although the notetakers did not comment or query during the focus groups, the presence of White notetakers influenced some participants’ responses.

Although we made an effort to include African Americans of diverse background (within the target age group), the participants were not representative of a national or local sample of African Americans. It is likely that age, literacy, statistical knowledge and health status affected the attitudes and preferences expressed. This sample was composed of volunteers, and it is impossible to know how individuals who chose to participate differ from those who did not. In addition, the provision of a monetary incentive may have influenced some individuals to participate in the study more than others. However, the findings do provide a basis for the measurement of the prevalence of the beliefs and attitudes identified here. In addition, this work provides an illustration of a technique for understanding preferences for the presentation of statistics to members of other groups.

Implications

It is standard public health and health education practice to address problems in the population most affected and to make programs relevant to the
populations they serve [22]. This ‘targeting’ strategy has been found to help promote behavior change [8] and is often the only feasible intervention approach. In contrast to culturally tailored programs that address sociocultural issues and concerns of the population at the individual level [8, 23], culturally targeted programs must address the fact that populations are not homogenous and their members do not accept or act on attitudes and beliefs with uniformity. For this reason, targeted communication can be more difficult to develop and there is a need to address group preferences related to all relevant cultural appropriateness strategies. This paper discusses an approach to assessing the presentation of statistical information (evidential strategy) to enhance the relevance of targeted communications [8].

Based on this qualitative research, we offer the following recommendations for health communication materials:

(i). Provide ethnic-specific data, but reduce comparisons to Whites unless incidence and mortality in other groups are discussed to provide a total context.

(ii). Include social math strategies. These may prove particularly effective with African American women. The examples used in these statements should be familiar and relevant to the target audience, as illustrated by the family example.

(iii). Include positive health trends observed in the African American community when relevant and feasible. This strategy may encourage hopeful attitudes.

(iv). Pair statistics with prevention messages that include diet and screening recommendations, signs and symptoms of illness and information on access to health care. This information may increase the perception that materials are useful to members of communities who lack knowledge or have strong concerns in these areas.

**Recommendations for future research**

Future research in this area should explore reactions to a wider array of evidential messages. These might include other social math references, such as baseball, travel references or popular record sales. While qualitative methods can yield information on group preferences and attitudes in response to health promotion messages, quantitative data are necessary to determine the prevalence of these preferences and attitudes and their influence on behavior. Thus, it would be useful to determine the strength of the preferences expressed by participants and the extent to which they influence changes in intention and actual colorectal or other cancer screening behavior, dietary change, physical activity and other preventive health behaviors. Future research could build on this qualitative data to examine the relative effectiveness of various statistical presentations. It may be particularly useful to capture and quantify the reactions of community participants to disparity data, as well as standard statistical presentations compared with data that use social math, and data presentations providing framing around death or survival. Quantitative research on strategies for presenting and framing health information presented to the African American community may represent a significant opportunity to understand reinforcing outcomes with respect to health and cancer information seeking.

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