Mass Media Approaches to Reducing Cardiovascular Disease Risk

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Synopsis

A key function of a basic and clinical biomedical research organization is to communicate the findings of clinical investigations so that people may apply the results to improve their health and well-being. To help communicate results from cardiovascular disease research, the National Heart, Lung, and Blood Institute has established a series of national health education programs.

The authors describe a model for two of the five programs and discuss the role of communication media in supporting national goals for education programs. The research basis for the programs is reviewed, together with the process by which the Institute develops information materials for mass media, notably public service announcements. A description of two national health education campaigns, hypertension and cholesterol, illustrates how market research is used to identify appropriate target audiences, develop messages, and select channels of communication. Lessons learned about the role of mass media in a national health education campaign are summarized.

BIOMEDICAL RESEARCH has produced remarkable insights into the causes, treatments, and prevention of heart disease in the past 40 years. Yet this knowledge would have little impact on the prevalence of heart disease in the population unless health professionals and the public, particularly those at high risk for heart disease, were aware of the information and knew how to apply the knowledge.

Traditionally, the results of research are communicated in journal articles, professional conferences, through mass communications media, and by word of mouth. The National Heart, Lung, and Blood Institute (NHLBI) uses all of these approaches to convey important findings to its various publics. However, when new knowledge strongly indicates that lifestyle changes or new or different uses of medications, for example, can significantly reduce the risk of heart disease for millions of people, traditional methods of communicating research may be unsuitable for achieving large scale change quickly.

NHLBI faced such a situation in 1972 when results from several clinical investigations provided convincing evidence that reducing high blood pressure reduced the risk of cardiovascular disease for millions of hypertensives. This new knowledge provided the rationale for establishing the National High Blood Education Program (NHBPEP).

Again in 1985, when clinical trial data showed that lowering blood cholesterol would reduce the risk of heart disease, NHLBI formed the National Cholesterol Education Program (NCEP). The structure and accomplishments of NHBPEP and NCEP have been described (*1*, *2*). This review of the circumstances that led to the establishment of the programs demonstrates the role of mass media in national education programs.

Formation of National Education Programs

By the early 1970s, epidemiologic evidence from the Framingham Heart Study (*3*), evidence from clinical trials (*4*), and actuarial data (*5*) provided convincing evidence that high blood pressure is associated with increased incidence of stroke and heart disease. Moreover, the results from two major clinical trials demonstrated that antihypertensive drug therapy could significantly reduce hypertension-related morbidity and mortality. Yet, to a large extent, the knowledge in 1972 largely remained with researchers.

Based on the 1972 definition for high blood pressure of 160 millimeters of mercury (mm Hg) systolic pressure and 95 mm Hg diastolic, more than 32 million people in the United States, or one in six, suffered from high blood pressure (*6*). Many of these hypertensives were never detected, and of those who had been detected and diagnosed, many did not remain on their therapy (*7*). Only 51 percent of hypertensives had ever been told by their physician that they had high blood pressure, and only 16 percent of hypertensives were taking medication to control their blood pressure (*8*). The high prevalence of hypertension, the known

efficacy of treatment, and the low levels of public awareness prompted NHLBI to establish NHBPEP in 1972.

The reasons for establishing the National Cholesterol Education Program (NCEP) were similar to those for establishing NHBPEP. By 1985, the results from a major clinical trial, the Lipid Research Clinics Coronary Primary Prevention Trial, and a large body of evidence from laboratory, epidemiologic, and clinical studies, showed that high levels of blood cholesterol are an important risk factor for coronary heart disease and that the levels can be lowered safely by diet and, if necessary, drugs.

However, surveys revealed that neither health professionals nor the public were fully informed of these findings (*9*). Moreover, analysis of data from the Second National Health and Nutrition Examination Survey (NHANES II) showed that about 60 million Americans aged 20 years or older were candidates for medical intervention to lower their blood cholesterol levels (*10*).

The widespread prevalence of high levels of blood cholesterol, the strong science supporting the efficacy of treatments, and low professional and public awareness persuaded the medical and public health communities to recommend that NHLBI establish a National Cholesterol Education Program.

From their inception, NHBPEP and NCEP were conceived as cooperative programs between NHLBI and national health organizations. At the core of both national education programs is a coordinating committee comprised of representatives from about 35 national professional, public, and voluntary health agencies. The coordinating committees follow a consensus building process so that when NHBPEP or NCEP adopts a position, develops a report, or sponsors education activities, the authority and prestige of 35 national organizations and NHLBI support the undertaking.

Three Tenets of a National Education Program

Both NHBPEP and NCEP have separate research agendas and programmatic objectives, and share three tenets of the education program's scientific base. The scientific base begins with basic research and continues with applied research and development, clinical investigations, clinical trials, and demonstration and education research. This biomedical research spectrum serves as a model for the education programs, whose science base includes clinical trials, clinical investigations, and demonstration and education research.

Second, the education programs rely on an intermediary approach to help define and achieve program goals. NHLBI seeks partnerships with organizations that have similar goals and objectives. The program goals are achieved not so much by the Federal Government but more by the organizations that comprise the coordinating committees, State health departments, and other intermediaries.

Third, the education programs stress the importance of articulating clear communication and program strategies. Communication strategy statements have been developed for both NHBPEP and NCEP. These statements, widely distributed to the intermediaries who work with the programs, identify the key target audiences and appropriate strategies for reaching those audiences. As a result, the many national organizations involved with the programs reinforce each other's communication efforts and those of the national program.

Mass media, particularly radio and TV public service announcements (PSAs), have played visible and influential roles in communicating the messages of the education programs. Yet mass media represent only one element of extensive national programs. Each of the other program elements contributes to the goals in their own unique way. Separately, these individual program elements would have a limited effect. Together, they have a synergistic effect that provides momentum to the programs.

NHLBI's National Education Programs

While the specific activities differ in each program, both NHBPEP and NCEP share similar program elements. Delineating the program elements shows where and how mass media fit into a national education program.

Developing programs and products. The most prominent products of the national education programs are the guidelines developed for health professionals for detecting, evaluating, and treating patients who have either high blood pressure or high blood cholesterol, or both. The guidelines form the medical foundation of the programs, and are developed through the consensus process by a panel of experts. The guidelines are distributed widely to health professionals and form the basis for developing a variety of other products targeted to patients and the general public. Guidelines have been developed for NHBPEP and NCEP.

Fostering local programs. While national education programs can provide overall guidance, State, local, and community programs actually carry out activities that reach individuals on a one-to-one basis and reinforce national messages. The national programs provide materials, programmatic ideas, and models that support the education efforts which are conducted by local organizations.

Sponsoring national conferences. National conferences provide a way to maintain and cultivate a network of people throughout the country who are involved in and committed to the goals of the national programs. National program representatives help plan and play key roles in regional conferences on high blood pressure and cholesterol. The conferences encourage an ongoing interchange about the needs of the local program providers and the plans for the national programs to meet those needs.

Providing news media with current information. Within the last 12 months, several articles in national newspapers were devoted to high blood pressure and cholesterol, such as the New York Times (*11*), the Washington Post health section (*12*), and USA Today (*13*).

Articles in national publications either citing NCEP or reflecting key education messages of NCEP were written virtually every week, sometimes more often. In most cases, staff of the national programs provided information media representatives with information for their stories and often helped them outline the issues. News coverage of both issues extended far beyond the originating publications. As Meyer has pointed out, the national news media, particularly the New York Times and the Washington Post, are at the top of a hierarchy of imitation that influences the news agenda for broadcast and reporting around the country (*14*). Extensive coverage helped keep high blood pressure and cholesterol on the media agenda and in the public eye, and reinforced the other thrusts of the education programs.

Developing products for the mass media. The mass media products of NHBPEP and NCEP are radio and television PSAs distributed to nearly all radio and TV stations through the country three times a year; print advertisements distributed to 150 national publications twice a year; posters distributed in the tens of thousands to State and county health departments; airport advertisements placed in airports around the country as a public service; a half-hour TV program on the three cardiovascular risk factors, high blood pressure, high blood cholesterol, and smoking, which TV stations can localize for their communities.

PSAs are one slice of a mass media effort and mass media is one slice of the larger national education program. Because PSAs are so visible, they serve as the centerpiece of NHLBI's national mass media campaigns. Like NHLBI education programs that are grounded in biomedical science, the mass media effort is grounded in communications science. That science is based on research results from numerous communication campaigns and community intervention studies conducted over several years and in different countries around the world. NHLBI education programs apply the results of clinical investigations when a clear public health benefit is evident. In a similar fashion, the mass media campaigns apply the results of communications research in determining when and how media campaign strategies and tactics can most effectively play a role in the development of public education programs. An overview of some of the pertinent communication campaign research helps illustrate the basis for NHLBI's current mass media effort.

Influence of Communication Research

For more than 50 years, communication campaigns have been used to influence peoples' attitudes and behaviors on a wide variety of subjects including the environment, safety, health, and policy issues. During this period, research has helped practitioners develop more sophisticated and effective campaigns. And the paradigm of campaign effects has evolved from an expectation of limited effects to an expectation of specific effects for well designed and executed campaigns.

In a review of research literature on communication campaigns, Rogers and Storey (*15*) observed that communication campaigns in the 1940s and 1950s were thought to have limited effects. As communication researchers took a closer look at campaigns, they began to identify attributes of a campaign that would increase the likelihood of success.

One of the earliest and best known communication campaigns that incorporated the growing body of campaign research was the Stanford Three Community Study (*16*). Begun in 1972, the study tested the effects of two different types of interventions, mass media alone and mass media supplemented with face-to-face skills training, incentives, and support. Specific behavior change objectives included reduction in cholesterol levels, reduction in high blood pressure, reduction in cigarette use, and an increase in physical activity to improve weight control.

The Stanford Three Community Study demonstrated that certain risk-reduction behaviors, for example, improved eating habits, could be learned through mass media alone when behavior change depended primarily on acquiring new knowledge. Other risk-reduction behaviors, such as smoking cessation, required mass media supplemented with skills training, face-to-face communication, social support, and other interventions, to be successful (*17*). The Stanford Five Community Study, a 14-year study begun in 1978, expands on the Three Community Study and is examining the role of mass media in long-term maintenance of behavior change (*17*). Several communication scholars have

evaluated successful and unsuccessful communication campaigns and have developed a body of normative theory about the formative research, design, execution, and evaluation of an effective campaign (*15, 18, 19*). The principles of social marketing are woven into the most successful campaigns. NHLBI has applied much of this theory in developing its mass media campaigns.

Campaign Development

The campaign development process is based on the fundamentals of social marketing. NHLBI's approach is a systematic means of defining communications issues and solving communications problems. The process begins by considering the perspective of the intended audience and designing strategies that contribute to behavior change.

Data review. The first step is a review of data on the prevalence of the problem and the knowledge, awareness, attitudes and behavior of the proposed target audience. From this review, the definition of the target audience is refined, audience segments may be selected, and major issues and messages are determined. In the case of a mature campaign, such as the high blood pressure effort, available new data are used to refine the ongoing campaign strategy and determine the need for incorporating new messages or audience segments.

Concept development. The next step is to develop concepts, themes, and specific messages for the campaign. Consistent with NHLBI's objectives of using the campaign to support overall public education goals and involving its partner organizations, the concept development stage draws on the advice of outside experts. Communications and medical professionals, State health officials, and others are convened to provide insight into target audience selection, potential barriers to and benefits of the desired behavior, and message strategies and concepts.

The advice of the group, along with the direction derived from the data review stage, provide the basis for development of the initial campaign materials. These are developed in preproduction forms suitable for message testing.

Message testing and field review. Material for all campaigns undergoes message testing using various techniques appropriate for the issue, product, and audience in question. Testing helps measure audience attention and recall of the material, and whether or not it is understandable, believable, credible, and relevant.

The campaigns employ standard pretesting techniques typical of those used by commercial advertisers and other social marketing campaigns. These include focus groups, as well as central location intercept interviews. Focus groups are groups of 8 to 10 persons, guided by a trained moderator, discussing predetermined issues or questions. Focus group results are used to gain insights into beliefs, motivations, and use of language. Responses cannot be considered representative of the public or projectable to the general population.

Central location intercept interviews are used to obtain more quantitative information than can be obtained in focus groups, since the number of respondents is larger, typically about 60 to 100 persons in each location. However, even these results are not projectable to a larger population. In this technique, interviewers are stationed at high-traffic places, such as shopping malls, and conduct brief interviews with passers-by, who are screened to ensure that they meet the criteria for the intended audience.

Gatekeeper review, while not strictly a pretesting technique, is another opportunity to gain advice on messages and to involve NHLBI's program partners in the campaigns. Members of the cholesterol and high blood pressure coordinating committees are asked to review concepts and scripts. While care is taken not to create materials by committees, the views of those in the field are considered important in developing the final campaign. Since the materials reach the intended audience through these intermediaries, they must find the campaign acceptable, relevant, and credible. If those in the field find a campaign inappropriate, even if it tests well with the intended audience, it loses some of its effectiveness and utility.

Production and distribution. Following field review, campaign materials are revised if necessary and put into final production. A typical year's campaign consists of a series of television and radio public service announcements, print advertisements, posters, and collateral print materials.

Distribution is another key area in which NHLBI involves the field in the campaign process. The campaign materials are distributed through a network based in State departments of health, typically in the chronic disease, health education, or public affairs units. The system, begun in 1984, provides for each State to appoint a person to manage the campaign information distribution process on the local level. Spots are tagged with local identification as specified by the State. Thus, the campaigns give visibility to State and local programs and their release can be coordinated with ongoing education efforts in each State. The campaign then is used as it was intended, that is, as one element

in broader community education programs. The identification with a local agency increases the likelihood that broadcast station public service directors will air the spots, since they typically prefer locally sponsored causes to national ones.

Evaluation. Process evaluation is conducted for each campaign. Outcome and impact evaluation of campaigns is subsumed under the evaluation performed for the overall NHBPEP and NCEP. Process evaluation includes readability and message testing of materials, review of adherence to program plans and strategies, and amount and type of print and broadcast coverage received. The evaluation of NHBPEP and NCEP is based on surveys and studies of changes in the behavior of the public, patients, and health professionals.

Mass Media Strategies

Public education through the mass media was a planned strategy of both NHBPEP and NCEP at their inceptions. Thus, mass media campaigns to educate people about high blood pressure have been conducted for 18 years, and campaigns on cholesterol for 5 years. In addition to differences in age, the two efforts are directed to different audiences at different stages of awareness, necessitating different message strategies.

High blood pressure audiences and messages. In contrast to the cholesterol effort, the high blood pressure media campaign today is a mature one. It is addressed to an aware and knowledgeable audience that has been receiving many messages on the subject for many years from many channels. The selection of audience and message has changed over a period of time to reflect changes in awareness, knowledge, and behavior.

The purposes of the first high blood pressure education media campaigns directed to the general public were to help increase awareness of the condition and to encourage detection. The earliest messages termed high blood pressure a silent killer, a time bomb ticking away inside you. At that time, 1973, only 29 percent of the public knew of the relationship between high blood pressure and stroke, and only 24 percent reported that high blood pressure causes heart disease (*20*). Furthermore, only about half of all hypertensives were aware that they had high blood pressure (*6*).

As awareness began to increase and detection became widespread, the audience and campaign messages changed. By 1982, 59 percent of the public knew of the relationship between high blood pressure and stroke, and 71 percent believed that it caused heart disease (*21*). Ninety-two percent knew that high blood pressure cannot be cured and that a person must stay on treatment (*21*). By 1985, 91 percent of the public knew that high blood pressure increases one's chances of getting heart disease and 77 percent knew that it is most likely to increase one's chances of stroke (*22*).

In the wake of these changes, the target audience was refined and segmented. Today, messages are aimed at aware hypertensives, that is, persons who have been told by a health professional that they have high blood pressure. By 1976–80, almost three-quarters (73 percent) of hypertensives were aware of their condition (*23*). Special emphasis is given to blacks because of the higher prevalence of high blood pressure in the black population. About 29 percent of whites have the condition, compared with 38 percent of blacks (*23*).

The message strategy has changed as awareness and knowledge have increased. From a beginning focus on simple awareness of the connection to stroke and heart disease, messages shifted to an emphasis on demonstration of treatment skills. Campaign materials showed and recited a litany of treatment behaviors, such as watch your weight, take medication as prescribed, and cut down on salt. While awareness of proper treatment has increased, treatment behaviors are still included in most campaign materials as a means of reinforcement.

The major objective of today's campaigns is to motivate hypertensives to stay on their prescribed treatment regimen. Although hypertension control rates have improved substantially since NHBPEP began, State data collected from the 1982–84 period show that about 43 percent of hypertensives still do not have their condition under control (*24*). In general, men are less likely to follow their treatment than women (*23*). Thus, a greater proportion of messages is specifically targeted to men.

A variety of strategies has been developed and tested to encourage treatment compliance. Messages have stressed the benefits of treatment, such as protecting loved ones, safeguarding one's health, and being around to enjoy the rewards of life. Campaign materials have sought to reinforce positive behavior, showing positive role models and support from family and friends. The reverse technique has been used. Messages have dealt with the negative consequences of untreated hypertension. Focus group testing has indicated that portrayal of negative consequences in a message of mild fear is believable, motivational, and attention-getting, especially for young men (*25*). In those messages, although mild fear was aroused, it was resolved through a clear call to action.

Audience research and message testing have yielded other information useful for refining campaign strategies. For example, campaigns have rarely used celebrity endorsements to deliver the message. Rather, testing has shown that the overwhelming choice of the

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audience for the most credible source of message delivery is another hypertensive (*25*).

In general, audience research has shown that differences in knowledge, attitudes, and behavior were greater between sexes and age groups than between races, that is, blacks and whites. Younger hypertensives were generally less concerned about their condition and felt they were invulnerable to the consequences of untreated hypertension. Not only were they less stringent in their treatment, they thought they had years in the future to deal with their condition and, therefore, could postpone treatment. Young men were the most likely to deny that their hypertension was a problem. In contrast, older hypertensives were more likely to accept their condition and comply with treatment. They were more willing to discuss problems with treatment and to find compliance, weight control in particular, very difficult (*25*).

Women were more likely than men to say they complied with treatment, to have regular checkups, to have a better relationship with their physicians, and to find comfort and support in groups such as Weight Watchers. They were more concerned with stress and the effect they believed it had on their blood pressure. Men were more likely to express lack of concern and to relate compliance to treatment with perceived symptoms. They were more likely to mention exercise as part of treatment, and more likely to mention problems with side effects of medication. They considered their condition a private matter; although they were not ashamed of having hypertension, they did not discuss it, especially outside of the family (*25*).

While the results of audience focus groups and message testing are qualitative, they tend to follow the same trends indicated in national survey data. For example, both sources indicate high awareness levels, good understanding of what treatment consists of, and greater compliance with treatment among women than men. Both qualitative and quantitative data continue to be useful in defining audiences and refining messages.

Cholesterol audiences and messages. The audience, issues, and messages of today's cholesterol mass media campaigns are similar to those of the high blood pressure campaigns of 18 years ago. The cholesterol education effort, in support of the relatively new NCEP, begun in 1985, is in the process of building audience awareness and knowledge. A statement of "Communications Strategy for Public Education," produced at the outset of the campaign, defined communications objectives (*26*). Over a period of time, the campaign could be expected to help

- Put high blood cholesterol higher on the public's health agenda,
- Improve and maintain awareness of the benefit of lowering high levels of blood cholesterol to lower the risk of heart disease,
- Influence public perceptions about the causes of and means to reduce high blood cholesterol,
- Reinforce positive attitudes and behavior toward reducing high levels of blood cholesterol; and
- Demonstrate skills for therapy maintenance and social support, as appropriate.

As in the early high blood pressure campaigns, the audience is the adult general public, owing to the substantial prevalence of the problem among men and women of all races across all age groups. About 36 percent of American adults are at increased risk of coronary heart disease because of high blood cholesterol levels. The range is from 20 percent of people ages 20 through 39 years to 58 percent of those ages 60 through 74 years (*10*).

The first major campaign messages have been aimed at reinforcing awareness and encouraging detection. In 1983, 64 percent of the public believed that lowering high blood cholesterol levels would have a large effect on preventing heart disease. However, 35 percent reported having their cholesterol level checked, and only 3 percent said they knew their number (*9*). In the early campaigns, the audience was urged to "have your cholesterol level checked and know what your number means to you."

By 1988, 59 percent of the public had had their cholesterol level checked, and 17 percent reported knowing their number (*27*). As awareness and detection continue to increase, the message will mature and will be aimed at a narrower audience, similar to the progress of the high blood pressure campaigns.

Unlike the early high blood pressure efforts, however, the cholesterol campaigns must contend with a confused and cluttered marketplace and widespread consumer confusion, fueled by ongoing controversies about cholesterol, diet, and heart disease. The confusion and lack of knowledge are evident both in survey data and the qualitative results of focus group research.

In a 1988 survey, substantially less than half of consumers could give correct answers to specific questions on dietary cholesterol and saturated fat (*26*). Focus groups consistently show that while people can recite, almost by rote, certain foods that should or should not be eaten in a cholesterol-lowering diet, they cannot say why this is so. They often cannot express an organizing principle or rule to help understand which foods in the diet contribute to high blood cholesterol (*27*). The confusion and lack of knowledge may contribute to a so-called motivated ignorance about both dietary issues and the need for detection.

In developing detection messages, results of target audience focus groups have helped indicate approaches to overcoming consumer indifference and confusion. For example, one of the strongest motivators for getting one's cholesterol checked is an age-old device, simple curiosity (*28*). In addition, focus group participants tended to identify with people who are healthy and fit, believing that if healthy people could have high blood cholesterol and were concerned enough to find out their number, maybe they should too (*28*). In general, message testing indicated that detection messages should

- Emphasize that high blood cholesterol can affect anyone and has no symptoms,
- Appeal to people's curiosity about the existence of a number that expresses their blood cholesterol level,
- Encourage people and convey the idea that something can be done about high blood cholesterol, and
- Reinforce people's identification with healthy, fit people (*28*).

As in the high blood pressure campaigns, the qualitative results of target audience research and national projectable survey data follow similar trends. In both sources, general awareness is high, but consumers lack specific knowledge that can lead to behavior change, especially concerning a cholesterol-lowering diet. In light of this, future efforts to educate the public about cholesterol levels will continue to focus on detection and will begin to deal with dietary issues.

Summary

In carrying out its media campaigns over the years, NHLBI has learned some lessons about how to ensure that they play an effective and appropriate role in the broad, national education programs it sponsors.

First, the campaigns are only one aspect of larger programs of professional, patient, and public education designed to reduce the risk of cardiovasular disease. However, the campaigns are an important aspect of the larger programs and are designed to play the role that communication research shows can result in the most effective contribution.

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Second, the mass media components are created using a careful process of campaign development, which is rooted in the fundamental principles of social marketing. NHLBI campaigns rely heavily on formative research and message testing in developing and refining campaign materials. Social marketing techniques are used to identify and segment target audiences, develop communications strategies, and convey messages.

The third lesson stems from the importance of involving NHLBI's partner organizations in the campaign. The campaigns involve persons in the field at various levels in the campaign development process, namely planning, execution and, especially, distribution. The broad involvement of many people in the field, particularly State health department officials, helps assure that the campaign messages continue to have the support of the gatekeepers who are the all-important conduit to the audiences that NHLBI is ultimately trying to reach.

The specific effects of NHLBI's mass media campaigns are more difficult to isolate. The campaigns are not conducted as field experiments with tight controls over who is exposed to the messages. Moreover, the messages from NHLBI mass media campaigns are only one source of information about high blood pressure and cholesterol. The media marketplace is filled with an array of messages, sometimes supporting, sometimes contradicting NHLBI education messages.

Nevertheless, since the NHBPEP mass media campaign was initiated in 1972, detection, awareness, knowledge, and treatment of high blood pressure have increased dramatically (*22*). Today, 92 percent of Americans know that high blood pressure cannot be cured and that a person must stay on treatment (*21*); 91 percent know that high blood pressure increases the risk of heart disease; and 77 percent know that high blood pressure increases one's risk of a stroke (*22*). Moreover, since 1972, the age-adjusted stroke mortality rate has declined by more than 52 percent (*22*).

The NCEP has a shorter history than NHBPEP. Yet

since the NCEP mass media campaign was initiated in 1986, the percent of Americans who have had their blood cholesterol measured has increased from 46 percent to 59 percent, and the percent who know their cholesterol level has increased from 7 percent to 17 percent (*27*).

These increases in knowledge and changes in behavior have occurred in a milieu of both complementary and competing messages. While NHLBI's mass media campaigns may not be exclusively responsible for the increases in awareness and changes in behaviors, it is reasonable to infer that the campaigns have contributed to and accelerated these changes.

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