

Georgia's Harvesting Health Habits: A Formative Evaluation

Georgia's Harvesting Healthy Habits: A Formative Evaluation

Roxanne Parrott, PhD, Carol Steiner, RN, MN, and Linda Goldenhar, PhD

ABSTRACT: Occupational safety and health researchers seek to conduct effective cancer awareness campaigns to increase agricultural workers' skin cancer prevention and detection behaviors. Georgia undertook such a project using a social cognitive theory (Bandura, 1986) conceptual model, with its objectives focusing on personal determinants of and environmental influences on farmers' behavior. One underused strategy to increase the success of health campaigns, formative evaluation, was undertaken during year one of the demonstration project, with four goals. These included an assessment of: (1) the availability of societal resources to support farmers' practices, (2) the affordability for farmers to follow through with behaviors being promoted, (3) the social support for behaving in ways that reduce farmers' skin cancer risk, and (4) farmers' current knowledge, outcome expectations, and self-efficacy in this regard. Formative evaluation revealed an absence of information, products, services, and social support for farmers' skin cancer prevention and detection. As a result, the Georgia project's plan was refined to include specific activities aimed at increasing the environmental support for health promotion activities relating to farmers' skin cancer prevention and detection. These include a seminar for rural primary care physicians and public health nurses to increase knowledge and skills relating to conducting clinical skin exams; programs for agricultural extension agents, cotton scouts, and 4-H groups to provide opportunities to learn more about and practice sun safety; and a feed and seed store campaign.

Research conducted during the past decade, primarily in relation to safety and injury prevention for farmers, demonstrates that agricultural workers have an increased incidence of skin cancers in comparison to other occupational groups and the general public (Blair & Zahm, 1991). Essentially, every study of nonmelanoma skin cancer (NMSC) death in farmers has shown that farmers have an elevated relative risk (Blair, Maler, Cantor, Burmeister, & Wilklund, 1985).

Subsequent studies have shown elevated lip cancer rates for farmers, some due to ultraviolet (UV) exposure (Blair, Zahm, Pearce, Heineman, & Fraumeni, 1992).

In the Midwest, a skin cancer screening directed toward outdoor workers, many of whom were farmers, detected 228 lesions in the 447 persons screened, a 48 percent incidence rate; only 20 percent of participants said they used sunscreens (Gilmore, 1989). The researchers in this study concluded that

This research was supported by Cooperative Agreement No. U03/CCU410103 from the National Institute for Occupational Safety & Health and a fellowship from the Institute of Behavioral Research at the University of Georgia. The authors thank Melanie Williams, Mary Martin, Michele Kilgore, Robert Lemieux, and Margaret Daniels for assistance in data collection; and Ted Scharf, the editor, and two anonymous reviewers for comments on earlier drafts. For further information, contact: Roxanne Parrott, PhD, Associate Professor, Speech Communication Department, Terrell Hall, Room 127, University of Georgia, Athens, GA 30602-1725.

community skin cancer screening and education programs need to be developed and conducted to encourage "the participation of those individuals involved in outdoor occupations such as farmers" (Gilmore, 1989, p. 212). In the final months of 1993, the National Institute for Occupational Safety and Health (NIOSH) awarded funding to support such a program in Georgia. During the first year of the demonstration project, Georgia conducted a formative evaluation to identify situations and/or conditions that could either facilitate or inhibit the effectiveness of implementing a skin cancer prevention and detection program for farmers.

Georgia Farmers and Cancer Control: Harvesting Healthy Habits' Conceptual Model

At the beginning of this decade, Georgia had 29 percent of its land in farms, with more than 43,000 farm operators receiving \$4.1 billion for their farm products in 1989, ranking the state 15th in total farm production value in the nation and third among Southeastern states—an amount twice that of 15 years earlier (Miller & Givan, 1991). Georgia's agricultural demonstration cancer control project, Harvesting Healthy Habits (GHHH), encompasses 11 counties in south Georgia, with three counties used as sites for formative evaluation and the other counties included in a quasi-experimental research design for project implementation. The area is primarily rural with agriculture occupying most of the land and row crops comprising the greatest segment of farming in the region; the largest number of acres being devoted to cultivation of cotton, peanuts, tobacco, and vegetables (Georgia Farm Report, 1994).

No data specific to Georgia farmers' cancer rates exists but the incidence of melanoma was 33 percent greater and deaths attributed to the disease 31 percent higher in Georgia than the national average in 1992, the latest data available at the time of the project's development. This above-average incidence may well be due to the state's location, as melanoma incidence increases for those who live nearer the equator (American Cancer Society, 1992). Likewise, incidence of basal and squamous cell skin cancer may well be elevated for Georgians due to latitude (Note 1). One study examining tumor registry data for patients with newly diagnosed invasive malignancies

determined that residents from rural areas were twice as likely to have unstaged cancers as urban residents; rural patients with known stage of diagnosis also had more advanced disease than urban patients (Liff, Chow, & Greenberg, 1991). The closest geographically located group of farmers to be documented, white male farmers in North Carolina, had an increased proportional mortality ratio of 1.80 for skin cancer in comparison to other white male decedents (Delzell & Grufferman, 1985).

Because 90 percent of skin cancers are preventable (American Cancer Society [ACS], 1992), appropriate education, persuasion, and behavior change could lead to a reduction in skin cancer. Prevention recommendations include regular use of sunscreen and sun protective clothing; detection recommendations include regular self- and clinical exams of the skin (Girgis, Sanson-Fisher, & Watson, 1994). Several categories of perceptions may be important in Georgia farmers' behavior and decision making about skin cancer risk, with social cognitive theory explaining such human function in terms of triadic reciprocal causation between personal determinants, environmental influences, and behavior (Bandura, 1986). Social cognitive theory, which has led to the successful development and implementation of health promotion interventions that have been both impressive in quantity and scope (Bernier & Avar, 1986; Desharnai, Bouillon, & Godin, 1986; Maibach, Flora, & Nass, 1991), forms the conceptual model for the GHHH demonstration project.

Personal determinants of behavior emphasized within social cognitive theory include knowledge, outcome expectations, and self-efficacy (Bandura, 1986). Outcome expectations include the anticipated physical, social, and personal results of engaging in recommended behaviors, and have been found to contribute to behavioral initiation (Bandura, 1991a). Self-efficacy addresses individuals' confidence about their ability to exert control over their own behaviors and also impacts the attainment and maintenance of preventive health behaviors (Bandura, 1991b; Strecher, DeVellis, Becker, & Rosenstock, 1986). Environmental influences emphasized within social cognitive theory include persuasive communication and cues to action, observational role models, and opportunities to experience and practice recommended behaviors (Bandura, 1986).

To attain the project's primary objective of increasing Georgia farmers' skin cancer prevention and detection behaviors, the GHHH general plan developed around secondary objectives relating to

the project's conceptual model. These include (1) increasing farmers' factual and procedural knowledge about skin cancer prevention and detection behaviors; (2) decreasing farmers' negative and increasing positive outcome expectations associated with performing the behaviors; and (3) increasing farmers' self-efficacy, the skills and self-confidence needed to perform the behaviors.

To attain these objectives, the GHHH general project plan focused on (1) sources relevant to the farming community to provide the persuasive communication and cues to action (e.g., health care providers, farming retailers, Farm Bureau); (2) sources to model the desired prevention and detection behaviors (e.g., agricultural extension agents); and (3) opportunities to practice the desired behaviors in situations where farmers live and work. From the outset, the GHHH demonstration project had the commitment of representatives from each of the groups identified to support project activities, as evidenced by letters of support and input about project objectives. Additionally, GHHH had the interest and enthusiasm of farmers in the demonstration area, including their willingness to function as members of a steering committee with representatives from across the demonstration project area.

Goals and Objectives of the GHHH Project's Formative Evaluation

Formative evaluation is a systematic method of identifying what activities should be included in a campaign plan, based on information collected about the target audience (Pfau & Parrott, 1993; Rossi & Freeman, 1993). The primary objective of GHHH formative evaluation was to systematically refine the general campaign plan, which was based on social cognitive theory (Bandura, 1986), using information collected about Georgia's farmers (Note 2). Beyond this primary formative evaluation objective, secondary objectives were to purposively assess the personal determinants of farmers' behavior and environmental influencers' efforts to support farmers' behaviors.

Goal One: Evaluate Farmers' Access to Societal Institutions and Resources Needed to Support Skin Cancer Prevention and Detection Behaviors. One explanation for findings that knowledge and behavior gains are greater for some groups than others is that structural characteristics of communities, the societal institutions and resources necessary for individuals to

act, in some way inhibit, or prevent some groups' behavior (Hornik, 1989; Tichenor, Donohue, & Olien, 1970). Farmers, for example, need access to: (1) information about how, when, and why to conduct skin self exams; (2) clinics and providers to give clinical skin exams; and (3) products, such as sun protective clothing and sunscreen, available in places where farmers shop. GHHH formative evaluation aimed to provide precise descriptions about the availability of these societal resources for farmers' use in preventing and detecting skin cancer.

Goal Two: Evaluate Farmers' Access to the Personal Resources Needed to Support Skin Cancer Prevention and Detection Behaviors. A second explanation for findings that knowledge and behavior gains are greater for some groups than others is individuals' tangible personal resources. Farmers have been found, for example, to lack disposable time and income, limiting the likelihood that they spend time or money on health prevention activities and products (Merchant, Kross, Donham, & Pratt, 1988; Rust, 1990). Another goal of the GHHH formative evaluation was to provide precise descriptions about the availability of farmers' personal resources to support recommended skin cancer prevention and detection practices.

Goal Three: Evaluate Social Support for Farmers' Skin Cancer Prevention and Detection Behaviors. A third explanation of differential gains among groups is community social influences. An examination of this issue acknowledges the behavioral impact of the groups one affiliates with on one's own behaviors (Bruhn & Phillips, 1984). The extension service, farm bureau, legislators devoted to farming interests, and the feed and seed industry have all been found to influence the farming community's thoughts and actions (Rogers, Burdige, Korsching, & Donnermeyer, 1988). Thus, GHHH formative evaluation aimed to provide an analysis of these groups' activities in relation to support for farmers' skin cancer behaviors.

Goal Four: Evaluate Farmers' Present Knowledge, Outcome Expectations, and Self-Efficacy Relating to Skin Cancer Prevention and Detection Behaviors. A fourth explanation is the differences in learned characteristics of individuals. Using the GHHH conceptual model, three particular characteristics—knowledge, outcome expectations, and self-efficacy—of farmers were the focal issues. Knowledge about skin cancer has been found, for example,

to relate positively to use of sunscreen (Girgis et al., 1994). Also, Lee, Marlenga, and Miech (1992) found that farmers' perceptions of hats' appearance, comfort, cost, and practicality in relation to weather and farm maneuvers affected likelihood of use, suggesting the significant relationships of farmers' outcome expectations and self-efficacy to skin cancer prevention and detection behaviors.

In sum, four goals guided the design and implementation of formative evaluation research during the first year of the GHHH demonstration project. These activities were undertaken to refine the project's plan in relation to a social cognitive theoretical conceptual model (Bandura, 1986).

Formative Evaluation Method

Participants and Procedures. To collect formative evaluation data during the first year of GHHH, a triangulated method including pilot survey instruments, field observation, and in-depth interviews was used (Patton, 1990). To avoid possible history or maturation effects due to exposure or participation in the formative evaluation, three counties adjacent to the project area, similar in characteristics to the intervention and control counties, were the location of the formative evaluation work.

Pilot Surveys. Pilot surveys were used to gauge basic characteristics of Georgia farmers' skin cancer prevention and detection behaviors, assessing characteristics relating to the project's conceptual model and formative evaluation goals, including: (1) farmers' knowledge, outcome expectations, and self-efficacy relating to skin cancer; (2) farmers' perceptions of social support for skin cancer prevention and detection behaviors; (3) farmers' perceptions about their access to personal and societal resources to support these behaviors; and (4) farmers' self-reports about their performance of these behaviors. The specific items used to assess these issues are discussed in the results.

One hundred fifty-five farmers responded to one of two pilot surveys while attending either the Georgia Young Farmers' (n=68) or the Georgia Farm Bureau's (n=87) annual state conferences. For the first group, respondents were recruited from a table in the exhibits area; for the latter, surveys were administered in a safety and injury prevention class. At each conference, a lottery drawing for one scholarship to a Farm Kids' Safety Camp (sponsored by a separate

Georgia organization) was used as an incentive for completing the pilot survey.

Farmers who completed pilot surveys representing considerable variation in age, experience, and farm type, with ages ranging from one 16 year old to one 82 year old, a mode of 45 and a median of 44 years; all participants were white. One farmer had worked a farm for only two years, another for 76 years; the mode was 20 and the median 27 years. About one half (55%) worked cattle or hog farms; the rest grew crops including vegetables (13%) and peanuts (19%).

Field Observations. Field observations were made of locations where farmers shop or have access to health care to assess the availability of skin cancer resources, including information, products, and services—a measure of environmental support for farmers' behaviors. Sites included 12 feed and seed supply stores, 14 health clinics, four libraries, five book and eight video stores, and the area Farm Bureau and American Cancer Society offices.

Field observations were also made of 144 outdoor workers during sunny summer weather; these included 49 farmers (including extension agents and feed and seed store workers), 41 construction workers, 39 road workers, and 15 others to provide a measure of actual behavior while working in the sun.

Nine graduate students were trained to conduct the field observation. Once in the field, researchers worked in pairs or groups of three, always functioning as teams, with each team completing one field observation form per site visited. Team members' agreement about an observation before it was recorded provided a measure of reliability. The primary researcher rotated team composition to reduce the potential for systematic bias in observation and rotated as a supervisor among teams.

In-depth Interviews. Three groups were selected with which to conduct in-depth interviews, providing detailed descriptive insights about community, group, and individual resources to support farmers' skin cancer prevention and detection behaviors. One Georgia state senator and three state representatives with responsibilities for the farming community were interviewed, including the state's Human Services' Committee Chair and members of its state House Agricultural Committee.

Ten public health nurses were interviewed, as Georgia delivers health services through county health departments and clinics where public health nurses provide primary care; such clinics are the most readily available source of formal health care in rural

Georgia. Nurses' ages ranged from one 20 to 30 year old, four in the 31- to 40-year range, two in the 41 to 50 age group, and three older than 51 years of age. One nurse had a master's degree, two had three-year nursing diplomas, and the remaining held four-year bachelor's degrees in nursing. Nine area farmers, including three feed and seed store owners, two agricultural extension agents, and the president of the Farm Bureau, were interviewed. Their ages ranged from 41 to 60 years of age. One farmer had had melanoma. These interviews took between one and two hours to complete and were conducted in legislators' offices, restaurants near public health nurses' place of employment, farmers' homes, and feed and seed stores. All interview subjects received a project T-shirt.

Formative Evaluation Measures were designed to assess personal determinants of farmers' skin cancer prevention and detection behaviors, and environmental facilitators or barriers. In general, the *pilot surveys* included: (1) 5-point Likert-type statements to assess farmers' perceptions of their behaviors, behavioral intentions, knowledge, outcome expectations, self-efficacy, and social support for skin cancer prevention and detection practices; (2) multiple choice questions to assess procedural and factual knowledge about skin cancer; and (3) open-ended questions to provide more detailed insights.

Field observation forms for outdoor workers' behavior included places to record what they were wearing on their heads, arms, legs, and face; additional space for optional comments was provided.

Site visit forms included a checklist to inventory community resources, including information, services, and products to support farmers' behaviors; additional space was provided to record the price and location of each, and/or to make additional comments. As much consistency as possible was maintained across the field observation forms to allow cross-situational comparison and promote reliability in use through observers' familiarity.

During the *in-depth interviews*, legislators, public health nurses, and farmers answered open-ended questions about their general skin cancer knowledge, behaviors to prevent and detect skin cancer, and efforts to promote prevention and detection to farmers, as well as needs for resources.

Formative Evaluation Results

Farmers' Skin Cancer Prevention and Detection Behaviors. In the pilot surveys, farmers reported that:

(1) 43 percent do not wear wide-brimmed hats to work in the sun, even though—in one version of the pilot survey—90 percent agreed or strongly agreed that wearing a wide-brimmed hat when working in the sun reduces chances of getting skin cancer, and in the other version 18 percent indicated "protects me from sun" as a reason for their personal use; (2) 49 percent fail to wear sunscreen, although 73 percent say they will try, and 19 percent indicate "protects me from sun" as a reason they wear it; and (3) 65 percent do not wear long-sleeved shirts, 61 percent have no intention of wearing such a shirt; 44 percent do not even plan to try, although 16 percent selected "protects me from sun" as a reason they wear one. On the other hand, 98 percent indicated they would have a physician check a suspicious mole, suggesting no need to educate farmers about this issue. Additionally, 79 percent ($n=122$) reported owning a tractor, 44 percent with no cover (umbrella) or cab; 54 percent reported owning some other piece of large farm equipment, with 52 percent of these having no cab or other cover. These findings suggest little use of such barriers to sun exposure. Field observations of outdoor workers revealed: (1) 95 percent were not wearing wide-brimmed cloth hats or caps with flaps; (2) 95 percent were not wearing long-sleeved shirts; (3) 26 percent had no eye cover; and (4) 86 percent wore long pants.

During the in-depth interviews, all but the farmer who had had melanoma said that they do not wear sun protective clothing or sunscreen when working in the sun, mostly because the clothing is too hot and sunscreen too inconvenient. State legislators indicated that farmers have not raised concerns about cancer with their representatives.

Availability of Skin Cancer Prevention and Detection Community Resources for Farmers. When asked where they would go to get information about skin cancer (1) 26 percent of the 155 surveyed had no response; (2) 56 percent said their physician, (3) 9 percent said the American Cancer Society, (4) 6 percent said the health department or a clinic, and (5) there were unique responses, including extension agents and libraries. Despite physicians being the most popular response, only 6 percent indicated their doctors recommend wearing a wide-brimmed hat, 11 percent wearing a long-sleeved shirt, and 10 percent using sunscreen. Only 2 percent reported doctors' failure to recommend use of wide-brimmed hats or long-sleeved shirts as a reason for failing to wear hats or shirts, while 3 percent said the same about sun-

screen. This is consistent with farmers' self-reliance and willingness to take personal responsibility for their situation and behavior (Merchant, et al., 1988). Only 1 percent indicated that wide-brimmed hats were unavailable where they shop, 3 percent said long-sleeved shirts were not in stores, and no one provided this as a reason for failure to use sunscreen. For field observations, a demonstrated general lack of cancer prevention and detection information, services, and products—including skin cancer—characterizes the sites observed. These include the health clinics and the American Cancer Society (ACS), sites identified by participants as places they would look for information.

The American Cancer Society's local unit had breast and prostate cancer brochures in the waiting room, and provided the society's "Fry Now, Pay Later" brochure in response to a request for information. The Farm Bureau had no general cancer information, despite being health insurance providers; they had one pamphlet entitled "GFB Vacation Tips" that discussed sun protection with no reference to protection while working. One bookstore had a general information book about cancer, though all stores could special order cancer-related books. No skin cancer books were available without special order. Four clinics had general cancer prevention and detection education materials, with three of the four being directly accessible; nothing specific to skin cancer was found. No clinics provided sunscreen samples or promoted obtaining clinical skin exams. No such messages appeared in feed and seed stores, though safety and injury information was available. Some implicit information about skin cancer was available through messages about pesticide use. One store had a sign, "We have hats!," but these were loosely woven wide-brimmed straw hats. Another store manager provided a catalog that contained only straw hats. Several stores sold long-sleeved shirts, but these were almost exclusively expensive embroidered shirts designed to be worn for horse and livestock shows. One store had zinc ointment for sunburn; seven sold udder cream, one with paba—all described as sun and frost protectors. Most offered planting and spraying services that keep individual farmers out of the sun.

The relevant findings from in-depth interview responses included legislators stating their perceptions that farmers resist legislative assistance to avoid increased regulation. One legislator suggested that to receive a farm subsidy, perhaps a farmer should provide evidence of compliance with safety and

injury prevention recommendations, including sun safety—an ironic idea in view of their perception that farmers resist increased regulation. Public health nurses indicated that the American Cancer Society was a primary resource for their own information, with four indicating the society provides them with print resources and one saying video information. Four also indicated a desire for more pamphlets, including some with pictures; four expressed the need for additional videos; and four sought samples of sunscreen, hats, and protective shirts. Nine nurses indicated that a workshop about clinical skin exams would be very beneficial, while eight public health nurses thought that a cancer information checklist to be incorporated into the patient's check-up form would be useful. Every farmer mentioned the availability of free baseball caps as a reason for wearing such hats; field observation revealed that 44 percent of the outdoor workers observed were wearing baseball caps.

Affordability of Skin Cancer Prevention and Detection Resources for Farmers. One of the pilot surveys revealed that: (1) 30 percent of the farmers viewed the amount of time it takes to put on a long-sleeved shirt as a barrier to use; (2) 8 percent felt the same about sunscreen; but (3) only 1 percent felt the same way about wide-brimmed hats. Cost was not viewed as a barrier to protective behavior. The finding that 18 percent wore long-sleeved shirts because it is an affordable protective practice suggests an important point to be reinforced; 9 percent said sunscreen use is affordable; 8 percent indicated the same about wide-brimmed hats.

Field observations revealed that skin cancer prevention and detection information, services, and products are generally not available, precluding an evaluation of their access in terms of cost. The summary of in-depth interview responses revealed that legislators believe skin cancer prevention and detection is of little importance among an occupational group with so many other bigger issues to address. One public health nurse indicated that work gets in the way of obtaining regular health check-ups; two said that the clinic hours limited the accessibility of farmers to the clinic and its information and services. Two others said that lack of insurance was a barrier, while two nurses said finances generally limited farmers' access. All farmers interviewed emphasized the time aspect over the financial aspect in limiting use of health services.

Social Support for Farmers' Skin Cancer Prevention and Detection Behaviors. Farmers' pilot survey responses about social support were measured by three items: (1) 53 percent agreed or strongly agreed that friends recommend protecting one's skin while working in the sun; (2) 66 percent said the same about extension agents; (3) 76 percent of family members were reported as recommending protection. In relation to sunscreen, 53 percent indicated extensions agents recommend this practice, while 68 percent said family members recommend the use of protective hats. Additionally, 30 percent of the 155 participants answered that their physician influenced health decisions; 27 percent said family members influenced these matters, while others gave varied responses.

Field observations revealed little observable social support for sun protective practices. No posters reminding farmers to practice such behaviors were posted at any of the sites. In observing the behaviors of family, friends, and extension agents, plus managers and workers at feed and seed stores, no one modeled the desired behaviors. In-depth interviews of legislators revealed few solutions. Six public health nurses indicated that they recommend sunscreen use, four told patients to wear long-sleeved shirts to work in the sun, and three said they recommended hats. Four nurses also advised clients to avoid sunbathing; one said she tells clients to see a dermatologist for skin exams. Farmers said that one group among them—cotton scouts—needed to be concerned with these matters more than others, as they spend a great deal of time in the sun assisting farmers in evaluating the growth and development of their cotton crops.

Farmers' Factual and Procedural Knowledge. Pilot surveys' findings about factual knowledge questions show farmers to be well informed about general skin cancer facts with one exception; 68 percent of the farmers selected the wide-brimmed straw hat as being most protective rather than the tightly woven, wide-brimmed fabric hat. Otherwise, 83 percent knew that an SPF of 15 or greater should be on sun block or sunscreen they use; 90 percent were aware that melanoma is the most deadly form of skin cancer; 86 percent recognized that sunburned skin that blisters increases chances of getting skin cancer; and 93 percent recognized the face and tops of the ears as the most common place to get skin cancer. Open-ended items revealed that 76 percent of the participants had never had a physician conduct a clinical skin exam, indicating a lack of familiarity

with the procedure; 71 percent did not know how to conduct skin self-exam. Some familiarity borne of experience characterized the group, as 14 percent had had skin cancer, and 79 percent knew someone in their family who had had skin cancer. Highlights of the in-depth interviews of farmers included one farmer's statement that wearing sunscreen is behavior for going to the beach. Another indicated that farmers do not use sunscreen because they "get toughened to the sun pretty fast, so they don't need it."

Outcome Expectations. Findings from the pilot survey of personal, social, and physical outcome expectations associated with sun protective behaviors produced the following: (1) 11 percent viewed sunscreen as too messy to use; (2) wide-brimmed hats are thought to be uncomfortable to wear by 21 percent, get tangled in work according to 9 percent, fall off wearer's head noted by 17 percent, and just are not liked by 9 percent. Farmers also agreed or strongly agreed in 94 percent of the cases that skin cancer is a serious disease; 90 percent said early treatment is highly successful. More than 90 percent believe farmers are more likely than others to get skin cancer and that long-term exposure to the sun is harmful to health, probably contributing to the finding that nearly all of them report that they know they should protect their skin while working in the sun; 66 percent expect to have the disease in their lifetime. In-depth interviews of farmers reveal, however, that they do not believe that having skin cancer will affect their ability to work.

Self-Efficacy. In reference to farmers' perceptions of self-efficacy, 73 percent of the farmers agreed or strongly agreed they feel confident about their ability to wear a wide-brimmed hat while working in the sun, 63 percent are confident they can wear sunscreen, and 48 percent are confident about their ability to wear a long-sleeved shirt—despite findings that they seldom practice the behaviors and sometimes have no intention of even trying. On the other hand, 20 percent of the farmers blame forgetfulness as a reason for failing to wear sunscreen, while another 14 percent say they put off putting it on. Forgetfulness and putting it off are important contributors to failure to wear long-sleeved shirts and wide-brimmed hats as well. These findings suggest that self-efficacy may be a multidimensional construct relating to perseverance and commitment, ideas Bandura (1986) suggests but neglected in prior research. Self-efficacy may relate to how easy an action is perceived to be, with 48 percent indicating confidence in their ability to wear these

shirts, while 17 percent of those who say they wear shirts indicate it is an easy thing to do; 8 percent indicated wearing sunscreen or wide-brimmed hats are easy things to do. During in-depth interviews, six farmers indicated that older farmers are more likely to practice sun protection, while younger farmers are "gamblers."

Conclusion

The GHHH project's primary objective is to increase Georgia farmers' skin cancer prevention and detection behaviors. With social cognitive theory (Bandura, 1986) as the conceptual model, the project's general plan developed around three objectives: (1) increasing farmers' factual and procedural knowledge about skin cancer prevention and detection, (2) decreasing negative while increasing positive outcome expectations associated with the behaviors, and (3) increasing the skills and self-confidence farmers need to perform the behaviors. To achieve these aims, the project focused on the development of environmental influences, including use of persuasive communication and cues to action, observational role models, and opportunities to practice behaviors being promoted.

In rural settings, residents are often underserved in relation to health promotion programs (Bender & Hart, 1986; Hendryx, 1993). Without community resources to support behaviors promoted in such programs, however, messages may heighten individuals' awareness but the situation limits the likelihood of action. Georgia's formative evaluation activities were designed to refine the project's plan, suggesting activities, audiences, and messages to promote skin cancer prevention and detection behaviors to farmers in a supportive setting. Prior to the conduct of formative evaluation, the project aims included the design of messages about skin cancer and farmers' risk. Formative evaluation revealed that farmers are well aware of their risk, even expecting to have the disease during their lifetime. Still, they do not expect it to affect their ability to work. This provided a focal topic for the development of campaign messages beyond addressing farmers' risk.

Before conducting formative evaluation, the GHHH project plan also included a focus on promoting the use of health care providers to obtain annual clinical skin exams. Farmers confirmed the appropriateness of using these expert sources for health care information, emphasizing the fact that physicians were most often the source they expected to help them

make health decisions and the most frequent resource to whom they would turn for information about cancer. Yet, the field observations of area clinics revealed few resources to support providers' efforts to educate their clients about skin cancer. In-depth interviews with rural health care providers also revealed a lack of knowledge and skills to enable performance of clinical skin exams. One public health nurse indicated that she told patients to see a dermatologist for skin exams, but a lack of time and available specialists in the area seem likely to limit farmers' response to this recommendation. Thus, a critical component of the Georgia Harvesting Healthy Habits project became the design and development of a Public Health Nurses and Rural Health Care Providers Skin Cancer Prevention and Detection for Agricultural Workers Program. It encompasses the design and use of a video to train providers to conduct clinical skin exams and the delivery of the video program in a seminar setting at the rural clinics. As a result of this activity, a refinement of the original plan, providers' skills and confidence in performing skin exams should be increased, contributing to the likelihood that they will be more persuasive in efforts to cue clients to prevent and detect skin cancer.

Formative evaluation findings also revealed that Georgia farmers perceive agricultural extension agents to support sun protection practices. Field observations of agents' outdoor behavior and self-reports during interviews with agents, however, revealed little support for sun protection practices, including failure to recommend appropriate protective practices. Moreover, these potential role models fail to understand many details about farmers' specific risk and appropriate practices, including the most protective hats. Farmers also conveyed personal concern that Georgia cotton scouts were at greater risk for skin cancer due to sun exposure than many other farmers would be. These findings contributed to the design of an Extension Agents and Cotton Scouts Skin Cancer Prevention and Detection Program. A training booklet, containing specific information about sunscreens and sun protective clothing, and a fact sheet and references to support farmers' increased risk provide tools for the agents' and scouts' education. The program aims to dispel such myths as "tanned skin provides protection from the sun" that emerged during the in-depth interviews. This program provides a means to both encourage these sources of influence to model appropriate protective behaviors that farmers may observe and to enhance the influencers' feelings of self-efficacy.

A third program component evolved around the recognition that Georgia farmers are strongly family oriented, with family constituting the second most frequently mentioned group to have an impact on their health decisions, and family being perceived to support sun protection behaviors more often than extension agents. Sun exposure builds up over a lifetime, and farming frequently is a family affair with children working alongside adults. As a result of both these truths and in recognition of the importance of family to Georgia farmers, a 4-H/Farm Kids' Camp/FAA Skin Cancer Prevention and Detection Program was developed. Through this avenue, another venue for persuasive communication and cues to action was added, the objective being to support the development of skin cancer prevention and detection behaviors in the generation growing up on Georgia farms.

A final broad component of the final GHHH campaign plan became the design and development of a Feed and Seed Supply Store Skin Cancer Prevention and Detection Campaign. Time and again, the field observations suggested why farmers forget to practice skin cancer prevention and detection behaviors. There were no messages or products relating to farmers' risk for skin disease or skin protection in the places where farmers indicated that they frequently shop and where they might be exposed to health promotion information even though they do not expect it (see Parrott, 1995, for a discussion of presenting information in a novel location). A supportive feed and seed store environment promotes skin protection to farmers and includes information about skin cancer prevention with messages aimed to address knowledge gaps. Products that enable farmers to protect their skin, such as sunscreens, comfortable and tightly woven wide-brimmed hats or caps with flaps, and tightly woven, long-sleeved, affordable work shirts, are available for purchase. Efforts are being made to gain changes in the design of free promotional hats provided through such outlets, adding a protective flap to the cap style.

In sum, the GHHH campaign plan advances four program aims based on a social cognitive theoretical model (Bandura, 1986), the objectives of which are to increase the: (1) accessibility of skin cancer prevention and detection community resources for farmers; and (2) social support for farmers' skin cancer prevention and detection behaviors, thereby increasing environmental facilitators of and reducing environmental inhibitors to farmers' behaviors. In turn, the process of implementing each of the above

programs aims to: (1) increase farmers' knowledge about skin cancer prevention and detection; (2) increase farmers' positive and decrease negative outcome expectancies associated with the efficacy of recommended responses/practices associated with cancer prevention and detection; (3) increase farmers' perceptions of self-efficacy about their ability to perform recommended practices associated with cancer prevention and detection; and (4) increase farmers' actual performance of recommended practices.

GHHH formative evaluation activities may be expanded beyond the target population, providing a model of how to identify the organizations and institutions that should be involved in health promotion efforts to increase the likelihood of success. With regard to cancer prevention, the GHHH project hopes to motivate institutions to reassess their priorities and agendas relating to skin cancer prevention and detection among farming populations, fulfilling an ethical obligation to provide an environment that supports behaviors promoted in relation to health (Parrott, Kahl, & Maibach, 1995; Salmon, 1989; Wallack & Dorfman, 1993).

Notes

1. Because incidence of basal and squamous cell skin cancers is so high, numbering in the hundreds of thousands, collecting specific incidence data has been deemed to be too costly to undertake.
2. See Pfau and Parrott (1993) for a discussion of communication campaigns and the contribution of formative evaluation in their success. See Rossi and Freeman (1993) for a discussion of types of program evaluation and their distinctions. See Finnegan, Bracht, and Viswanath (1989) for a discussion of a community analysis approach to formative evaluation, which uses population surveys, community leader interviews, health professional interviews and focus groups, oral histories, and an analysis of such existing data sources as census studies.

References

- American Cancer Society (1992). *Cancer facts and figures—1992*. Atlanta, GA: Author.
- Bandura, A. (1991a). A social cognitive approach to the exercise of control over AIDS infection. In R. DiClemente (ed.), *Adolescents and AIDS: A generation in jeopardy*. Newbury Park, CA: Sage.
- Bandura, A. (1991b). Self-efficacy mechanism in psychological activation and health-promoting behavior. In J. Madden, S. Matthisse, & J. Barchas (Eds.), *Adaptation, learning, and affect*. New York, NY: Raven Press.
- Bandura, A. (1986). *Social foundation of thought and action: A social cognitive approach*. Englewood Cliffs, NJ: Prentice Hall.
- Bender, C., & Hart, J.P. (1986). Rural health promotion: Bailiwick for social work. *Health and Social Work*, 11(1), 52-58.

- Bernier, M., & Avard, J. (1986). Self-efficacy outcome, and attrition in a weight-reduction program. *Cognitive Therapy and Research*, 10(3), 31-338.
- Blair, A., Maler, H., Cantor, K.P., Burmeister, L., & Wilklund, K. (1985). Cancer among farmers: A review. *Scandinavian Journal of Work and Environmental Health*, 11(6), 397-407.
- Blair, A., & Zahm, S.H. (1991). Cancer among farmers. *Occupational Medicine: State of the Art Reviews*, 6(3), 335-354.
- Blair, A., Zahm, S.H., Pearce, N.E., Heineman, E.F., & Fraumeni, J.F. (1992). Clues to cancer etiology from studies of farmers. *Scandinavian Journal of Work and Environmental Health*, 18(2), 209-215.
- Bruhn, J.G., & Phillips, B.U. (1984). Measuring social support: A synthesis of current approaches. *Journal of Behavioral Medicine*, 7(2), 151-169.
- Delzell, E., & Grufferman, S. (1985). Mortality among white and nonwhite farmers in North Carolina, 1976-1978. *American Journal of Epidemiology*, 121(3), 391-402.
- Desharni, R., Bouillon, J., & Godin, G. (1986). Self-efficacy and outcomes expectation as determinants of exercise adherence. *Psychological Reports*, 59(3), 1155-1159.
- Finnegan, J.R., Bracht, N., & Viswanath, K. (1989). Community power and leadership analysis in lifestyle campaigns. In C.T. Salmon (Ed.), *Information campaigns: Balancing social values and social change* (pp. 54-84). Newbury Park, CA: Sage.
- Georgia Farm Report. (1994). Georgia agricultural statistics service. *Agricultural Statistician and Georgia Department of Agriculture*, 94. Athens, GA: U.S. Department of Agriculture.
- Gilmore, G.D. (1989). Sunscreens: A review of the skin cancer protection value and educational opportunities. *Journal of School Health*, 59(5), 210-213.
- Girgis, A., Sanson-Fisher, R.W., & Watson, A. (1994). A workplace intervention for increasing outdoor workers' use of solar protection. *American Journal of Public Health*, 84(1), 77-81.
- Hendryx, M.S. (1993). Rural hospital health promotion: Programs, methods, resource limitations. *Journal of Community Health*, 18(4), 241-249.
- Hornik, R. (1989). The knowledge-behavior gap in public information campaigns: A development communication view. In C.T. Salmon, *Information campaigns: Balancing social values and social change* (pp. 113-138). Newbury Park, CA: Sage.
- Lee, B., Marlenga, B., & Miech, D. (1992). *Farmers' caps and hats: Skin cancer prevention project*. Marshfield, WI: National Farm Medicine Center.
- Liff, J.M., Chow, W.H., & Greenberg, R.S. (1991). Rural-urban differences in stage at diagnosis: Possible relationship to cancer screening. *Cancer*, 67(5), 1454-1459.
- Maibach, E., Flora, J., & Nass, C. (1991). Changes in self-efficacy and health behavior in response to a minimal contact community health campaign. *Health Communication*, 3(1), 1-16.
- Merchant, J.A., Kross, B.C., Donham, K.J., & Pratt, D.S. (1988). *Agricultural occupational and environmental health: Policy strategies for the future: A report to the nation*. Iowa City, IA: National Coalition for Agricultural Safety and Health, University of Iowa.
- Miller, G., & Givan, W. (1991). *Georgia agriculture at a glance, 1991*. Athens, GA: Extension Agricultural Economics Department.
- Parrott, R. (1995). Motivation to attend health messages: Presentation of content and linguistic considerations. In E. Maibach & R. Parrott (eds), *Designing health messages: Approaches from communication theory and public health practice* (pp. 7-23). Newbury Park, CA: Sage.
- Parrott, R., Kahl, M., & Maibach, E. (1995). Enabling health: Policy and administrative practices at a crossroad. In E. Maibach & R. Parrott (eds), *Designing health messages: Approaches from communication theory and public health practice* (pp. 270-283). Newbury Park, CA: Sage.
- Patton, M.Q. (1990). *Qualitative evaluation and research methods* (2nd ed.). Newbury Park, CA: Sage.
- Pfau, M., & Parrott, R. (1993). *Persuasive communication campaigns*. Needham Heights, MA: Allyn & Bacon.
- Rogers, E.M., Burdige, R.J., Korsching, P.F., & Donnermeyer, J.F. (1988). *Social change in rural societies: An introduction to rural sociology* (3rd ed.). Englewood Cliffs, NJ: Prentice Hall.
- Rossi, P.H., & Freeman, H.E. (1993). *Evaluation: A systematic approach* (5th ed.). Thousand Oaks, CA: Sage.
- Rust, G. (1990). Health status of migrant farmworkers: A literature review and commentary. *American Journal of Public Health*, 80(10), 1213-1217.
- Salmon, C.T. (1989). *Information campaigns: Balancing social values and social change*. Newbury Park, CA: Sage.
- Strecher, V., DeVellis, B.M., Becker, M.H., & Rosenstock, I.M. (1986). The role of self-efficacy in achieving health behavioral change. *Health Education Quarterly*, 13 (1), 73-91.
- Tichenor, P., Donohue, G., & Olien, C. (1970). Mass media flow and differential growth in knowledge. *Public Opinion Quarterly*, 34, 159-170.
- Wallack, L.M., & Dorfman, L. (1993). *Media advocacy and public health: Power for prevention*. Newbury Park, CA: Sage.