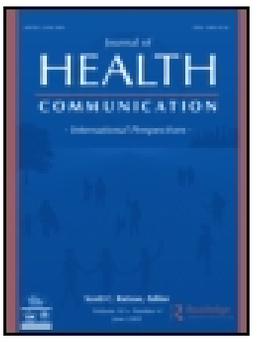

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Roxanne Parrott, Katherine Wilson, Carolyn Buttram, Karyn Jones, Carol Steiner

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Migrant Farm Workers' Access to Pesticide Protection and Information: Cultivando Buenos Habitos Campaign Development

ROXANNE PARROTT
KATHERINE WILSON
CAROLYN BUTTRAM

Department of Speech Communication
University of Georgia
Athens, Georgia, USA

KARYN JONES
CAROL STEINER

Cancer Control Program
Georgia Department of Human Resources
Atlanta, Georgia, USA

Formative evaluation of south Georgian migrant farm workers' access to information and products to promote pesticide protection and understanding of cancer risk associated with pesticide exposure was conducted using field observation, in-depth interviews of Georgia's Migrant Health Program's outreach workers, and structured face-to-face surveys of migrant farm workers. The data indicated that fewer than one-third of the pesticide products reviewed contained messages about pesticide use and exposure risk for humans. Risk information on products appeared in English only. Few protective devices were available for purchase. Migrant farm workers were aware in a very general sense of health risks posed by pesticides, but they were specifically unaware of the reach of pesticides sprayed, as illustrated by their field behaviors. Findings also demonstrated the need to educate outreach workers about migrant farm workers' cancer risk, so that they may act as migrant farm workers' health advocates to reduce the adverse effects associated with pesticide exposure.

> "The problem is not only to conceptualize communication-as-dialogue, but also to practice it as dialogue." (Dervin, 1989, p. 75)

The number of hand laborers has decreased across the United States, while the average size of farms has increased, contributing to an influx of migrant farm workers (Blair & Zahm, 1991). Migrant farm workers, who are "predominately young married Hispanic men with families" (General Accounting Office/Human Resource Development 92-46, 1992, p. 8), face political, legal, and social disfranchisement (Bacon, 1996; Welch, 1996). A large literature supports both migrant farm workers' health problems and risks, many owing to pesticide exposure and use (Rust, 1990), and migrant farm workers' difficulties in accessing the health care system (Marin & Marin, 1990). Despite the clear evidence of risk, little is known

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Address correspondence to Roxanne Parrott, University of Georgia, 127 Terrell Hall, Athens, GA 30602-1725. E-mail: rparrott@arches.uga.edu

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about efforts to communicate about pesticides to migrant farm workers or the workers' understanding of risk (Poma, 1983). This project formatively evaluated migrant farm workers' access to and awareness of pesticide exposure information and the availability of support from one state's migrant health program's outreach workers for migrant farm workers' pesticide risk control behaviors. State migrant health programs aim to satisfy these laborers' acute care needs and to increase preventive and protective health practices, reducing the incidence of health crisis and use of costly emergency room visits (Dever, 1991). Findings of the formative evaluation contributed to the development of the campaign, Cultivando Buenos Habitos.

Formative Evaluation of Migrant Farm Workers' Pesticide Awareness

Communication campaign theorists and researchers give credence to the idea that formative evaluation composes a significant component of campaign activities (Atkin & Freimuth, 1989). Failure to conduct formative evaluation from a sense-making framework, in which campaigners become listeners, targets become audiences, and discontinuities become apparent, may contribute to a self-reflexive loop in which campaigners exercise "top-down, information-as-description, and communication-as-transmission practices" (Dervin, 1989, p. 85). Sense making gives prominence to situations in constructing individuals' behavior and acknowledges the inherently systemic nature of the "place" one resides in- both temporally and culturally- in ordaining, maintaining, and sustaining day-to-day thoughts, emotions, and actions (Dervin). The sense-making campaigner does not question, "Why aren't they doing what we want them to do?" but rather, "How could they be expected to do other than what they are doing?" Whereas the latter question may motivate institutions to reassess their priorities and agendas, the former question frequently lays blame at the feet of those intended to be helped by the institutions (Salmon, 1989).

The foundational assumption of a sense-making approach, the discontinuity premise, acknowledges that gaps exist between what is real versus possible and what is observed versus experienced, gaps that are "always cognitive [i.e., constructed in the head] and sometimes are overbearingly physical as well" (Dervin, 1989, p. 77). In the issue under consideration for this analysis, migrant farm workers' complex health problems have been documented, with many of these due to the nature of their work (Decker & Knight, 1990), including skin disease from pesticide exposure (Blair & Zahm, 1991). Pesticides refer to the use of insecticides, rodenticides, fungicides, herbicides, fumigants, defoliants, molluscicides, nematocides, algicides, and acaracides, with 1.2 billion pounds of pesticides being used in the U.S. each year (Cordes & Rea, 1988). The primary way for workers to be exposed to pesticides occurs by "the skin, and not, as commonly believed, the respiratory system .... Persistence of pesticides on the skin for many months after the last exposure has been shown" (Moses, 1989, p. 116).

When compared with other occupations, all agricultural workers face increased likelihood of being exposed to factors highly correlated with the development of skin diseases. Migrant farm workers, however, must overcome additional barriers posed by language and social factors in order to receive information to safeguard against exposure and obtain health care when exposed. One broad-based needs assessment of a migrant farm worker community determined migrants to be "a

community with varied and profound health needs" (Decker & Knight, 1990, p. 144), with a "need-service mismatch" in all areas examined, including pesticide hazards (Decker & Knight). This formative evaluation sought to extend that finding by identifying the availability of (1) societal, (2) social, and (3) personal resources to promote migrant farm workers' pesticide awareness and protection, thereby identifying the actual situation to compare with the potential situation, and to consider the farm workers' experiences alongside what is observed.

Societal Support for Migrant Farm Workers' Pesticide Awareness and Protection

Some groups in society as compared with others have greater access to societal institutions and resources necessary to practice prevention and promote personal health and well-being (Hornik, 1989; Tichenor, Donohue, & Olien, 1970). Migrant and seasonal farm workers reside in very poor conditions and often have ill health with no one enforcing labor protection laws on their behalf (Linder, 1990). Many migrant farm workers are Mexican.

> Data from international organizations reveal that close to half of all Mexicans now live in poverty, and of those, some 17 to 20 million are officially classified as living in extreme poverty .... The most relevant consequences of this situation are, on the one hand, a decreasing satisfaction of health care and education needs, and, on the other hand, a marked deterioration of the public and quasi-state institutions that supplies these services. (Laurell, 1992, p. 92)

Thus, although many migrant farm workers are not protected by U.S. federal labor laws due to their undocumented status, they may still be better off than they are in their own country and, consequently, reticent about organizing to seek better treatment (Dash, 1996). As a result, "migrant farm workers, as the largest sub-class of sweated workers in the United States today, are caught in the same web of exploitation that Congress pilloried a century ago" (Linder, 1990, p. 213). The need to improve the situation in which they labor has been the recognized status for migrant farm workers since the 1951 report of a presidential commission charged with the task of studying the migrant farm labor force (Martin & Martin, 1994). Federal programs designed to assist migrant farm workers and their families, however, actually aim to help them "to escape from the farm labor market" (Martin & Martin, p. 2), rather than to improve the situation. An alternative solution would be to improve the status of being a farm worker. With regard to pesticide use, this would include providing access to information and resources to protect oneself when using pesticides. One question addressed by the formative evaluation was, "Do migrant farm workers have access to information and resources relating to pesticide exposure?"

Social Support for Migrant Farm Workers' Pesticide Awareness and Protection

During the development of numerous health campaigns over the past decade, particular emphasis has been given to the issue of social support when an audience is less educated, has low literacy levels, or in other ways may be unmotivated to attend to health messages (Gilchrist & Schinke, 1983; Kaplan, Atkin, & Reinsch, 1984; Maibach, Flora, & Nass, 1991). Hispanic patients are more likely to respond

to flexible, easily accessible caregivers who minimize the impact of a bureaucratic system (Watkins, Larson, Harlan, & Young, 1990). Hispanics also hold a fatalistic outlook on life leading to passivity about treatment (Meister, 1991). To attempt to alleviate the cultural and socioeconomic barriers to health care that migrants and their families face, a number of programs have incorporated the use of outreach workers (Boettcher, 1993; Calsyn, 1989; Watson, 1993). Outreach workers serve as liaisons between migrants and health care providers, sources and models of health care information and behavior, and often as general advocates for migrant workers and their families' health (Watkins, Larson, Harlan, & Young, 1990). Outreach workers "of similar culture and community characteristics as the target population [serve] to bridge the socio-cultural gap between providers and families as well as to provide informational and supportive health care services to underserved groups" (Warrick, Wood, Meister, & deZapien, 1992, p. 14). As part of the formative evaluation activities, a second issue addressed was, "What do outreach workers know and expect with regard to migrant farm workers' exposure to pesticides?"

Personal Support for Migrant Farm Workers' Pesticide Awareness and Protection

Several categories of perceptions may significantly impact migrant farm workers' awareness and behavior relating to pesticide exposure. 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, 1991). A number of researchers have found positive outcome expectations to be strongly correlated with the performance of cancer prevention behaviors (Koh, Geller, Miller, Caruso, Gage, & Lew, 1991). Other studies have identified negative outcome expectations as a major detriment to adoption of prevention behaviors (Ross & Sanchez, 1990). Berwick, Fine, and Bolognia (1992) posit "higher priority given to other medical problems, limited funds, poor health and the belief that ... the use of sunscreen would not be of major long-term benefit" (p. 309) as reasons for noncompliance. These issues would also be likely to limit the migrant population's performance of skin protection behaviors, as farm workers often cite employment as their highest priority, with health issues far down the list (Lantz, Dupuis, Reding, Krauska, & Lappe, 1994; Kalichman, Hunter, & Kelly, 1992). The following research question was addressed: "What outcomes do migrant farm workers expect from pesticide exposure?"

Method

Participants and Procedures

To collect formative evaluation data, a triangulated method was used (Patton, 1990). This included field observations, in-depth interviews, and structured face-to-face surveys. The activities were undertaken as part of the Cultivando Buenos Habitos Campaign development in several counties of one southeastern state where row crops compose the greatest segment of farming in the region, with the largest number of acres being devoted to cultivation of cotton, peanuts, tobacco, and vegetables (Georgia Farm Report, 1994). Cultivation of these crops suggests that migrant farm workers are likely to spend much of the time they are working exposed to pesticides toward the goal of crop production. Exposure increases the likelihood of skin disease and other ailments relating to pesticides.

Field Observation

A checklist was developed and used in 12 feed and seed supply stores to evaluate the availability and affordability of pesticide protection equipment and information. The items for the checklist were based on what an ideal situation for farm workers would be like, including the presence of pesticide protective gloves, face shields, and aprons for purchase, and accessible information about how, when, and why to use these protective devices. A comparison of the actual availability and affordability of pesticide protection and information with an ideal situation granted a method to conduct a discontinuity analysis in this regard (Dervin, 1989). Field observation methods were also used to assess migrant farm workers' field exposure and behaviors in relation to pesticide use on nine farms employing dozens of laborers per farm, evaluating an ideal situation in which farm workers would be protected from pesticide exposure with the real situation in which they were found to be working.

In-Depth Interviews

The decision was made to interview those most closely associated with facilitating migrant workers' access to health information and care, the state's migrant health program's (MHP) outreach workers in the target area. Although Georgia farmers are concerned with providing a safe working environment for their hired help, they do not provide health benefits to migrant farm laborers. Farmers themselves often do not have adequate health insurance, as they are not organized as a group to attain group insurance. Moreover, farmers often do not speak Spanish, and so they frequently employ bilingual crew leaders to recruit and pass along payment for services to the actual migrant farm laborers.

In-depth interviews ($n = 7$) of the state's MHP outreach workers in the target area were conducted. Based on previous programs' positive experience in incorporating the use of outreach workers to attempt to overcome cultural and socioeconomic barriers to health care (e.g., Boettcher, 1993; Calsyn, 1989), the MHP incorporates outreach workers to serve as liaisons between migrants and health care providers in the state's MHP clinical service utilization and followup. Three of the outreach workers interviewed reported accompanying migrants to physician appointments to translate; all visit the fields and migrant camps on a regular basis to "look for people" who need medical service. All of the MHP outreach workers interviewed speak both Spanish and English. Six were at least half Hispanic or Guatemalan and were migrant workers or from migrant farm worker families. Several had family members who worked in the field; one outreach worker's husband and son were crew leaders, with responsibility for recruiting and maintaining a pool of migrant laborers.

One interviewee was male; the rest were female. All worked out of county health department clinics. The youngest respondent was 30 years old, and the oldest 63; the mean age was 45 years. Six of the interviews were conducted face to face, and one interview was conducted via telephone. The mean duration of each interview was 50 minutes; the shortest interview lasted approximately 35 minutes, and the longest an hour and a half. Interviews were audio taped and transcribed, and the complete transcripts were used during the data analysis and interpretation process to avoid taking the meaning of an expressed idea out of context. A coding sheet to assess behavior, knowledge, outcome expectations, self-efficacy, and access to pesticide protection and information resources was developed for use with this project. The issues included under each of the interview questions in Table 1 guided the

TABLE 1 Interview schedule for migrant farmers' outreach workers

Questions relating to outreach workers' *behaviors* relating to skin disease included the following:

(1) Have you done anything to prevent or reduce your chances for getting skin cancer? If yes, what have you done?
(2) Have you done anything in your work environment to prevent or reduce your chances for skin cancer? If yes, what have you done?
(3) Do you conduct a monthly exam of your own skin/wear a wide-brimmed hat/wear sunscreen/make an appointment with a doctor to examine your skin/wear a long-sleeved shirt to help prevent or detect skin cancer?
(4) Do you ever do work that exposes you to pesticides? If yes, do you wear chemically resistant gloves/a chemically resistant apron/a face shield?

Questions relating to outreach workers' *knowledge* about skin disease included the following:

(1) How likely do you think agricultural workers in general are to get skin cancer?
(2) How often should you conduct an examination of your own skin/wear chemically resistant gloves to protect your skin when using pesticides?

Questions relating to outreach workers' *health information sources* included the following:

(1) Have you ever received information about ways to prevent or detect skin cancer? If yes, what information have you received? Who gave you the information?
(2) Has your doctor ever recommended that you conduct an exam of your own skin/obtain a clinical skin exam/wear chemically resistant gloves/wear a chemically resistant apron/wear a face shield to help prevent or detect skin disease?
(3) Have you received any information about conducting an exam of your own skin/obtaining a chemical skin exam/wearing chemically resistant gloves/wearing a chemically resistant apron/wearing a face shield to help prevent or detect skin disease? If yes, who did you receive this information from?

Questions relating to outreach workers' *outcome expectations* about skin disease included the following:

(1) How serious would having skin cancer be for you personally?
(2) How do you believe having skin cancer would affect your ability to work?
(3) How do you believe having skin cancer would affect your overall health?
(4) What are reasons that you do NOT examine your own skin/wear chemically resistant gloves/wear a chemically resistant apron/wear a face shield to prevent/detect disease?
(5) What are the reasons that you DO examine your own skin/get a clinical skin exam/wear chemically resistant gloves/wear a chemically resistant apron/wear a face shield in order to prevent or detect skin disease?

Questions relating to outreach workers' self-efficacy included the following:

(1) How confident do you feel in your ability to conduct an exam of your own skin/wear chemically resistant protection to help prevent to detect skin disease?

TABLE 1 Continued

Questions relating to outreach workers' knowledge about *migrant workers' behaviors* included the following:

(1) What have you seen the migrant workers doing to prevent skin cancer?
(2) Have you observed migrant workers wearing a face shield/chemically resistant gloves/a chemically resistant apron when handling pesticides?

Questions relating to *outreach workers' role* in skin disease prevention and detection among migrant workers included the following:

(1) How often do you discuss health issues in general with the migrant workers?
(2) How often do you discuss cancer in general with the migrant workers?
(3) How often do you discuss skin cancer specifically with the migrant workers?
(4) How often have you shown a migrant worker how to conduct a skin exam to detect skin cancer?
(5) How often have you recommended to a migrant worker to conduct a skin exam/wear a wide-brimmed hat/get a clinical skin exam/wear chemically resistant gear when working with pesticides to help prevent or detect skin cancer?

analysis of the interviews. The goal of the analysis was to identify gaps between the outreach workers' expressed levels of behavior, knowledge, outcome expectations, self-efficacy, and access to pesticide protection and information resources and what would be ideal, a discontinuity analysis (Dervin, 1989).

Face-to-Face Surveys

Five trained field researchers fluent in Spanish (two of them outreach workers) conducted face-to-face surveys of 279 male migrant farm workers recruited from 21 different locations. The locations included five farms, each employing dozens of farm workers ($n = 35$); three houses ($n = 38$), each being rented by a group of about a dozen migrant laborers; three county health departments seeing migrant laborers ($n = 27$); grocery stores frequented by Mexican farm workers ($n = 18$); trailer parks ($n = 19$); restaurants ($n = 34$); laundromats ($n = 10$); and health fairs for migrants offered by county health departments ($n = 41$). The remainder were surveyed in their homes while waiting to be recruited for a work team, and in other various venues where one or two interviews were obtained.

The farm workers ranged in age from five who were under the age of 15 to one who was over the age of 60; 42 were between 15 and 20 years of age; 121 were between 20 and 30 years of age; 67 were between 30 and 40 years of age; and 27 were between 40 and 50 years of age. Most were born in Mexico, with 148 identifying a state in Mexico as their birthplace; 11 were from Guatemala; five were from Puerto Rico; one from Columbia; one from Cuba; one from Honduras; one from Nicaragua; and one from Venezuela. Eight indicated that they were born in Georgia, Florida, or Texas. Sixty-eight of the respondents did not answer this question.

Seven percent of those surveyed said that they had had someone in the family with cancer, but none of the respondents had themselves experienced cancer. Seven percent described their health as excellent, 44% said good, 41% said normal, and

5% said bad; 3% did not respond. Six percent indicated that they had a doctor who cared for them; 21% indicated it had been five years or longer. Six percent also indicated that they had experienced a serious illness. Six percent indicated that they had visited a doctor's office in the past month, while 13% indicated it had been one to two months; 12% said between two and six months; 13% indicated it had been more than six months but less than a year; 35% said more than a year, but less than five years; only ten percent of the participants reported that they had ever had a clinical skin exam.

Results

Field Observations

From the feed and seed supply sites, 27 different pieces of literature about pesticides were collected and evaluated in terms of the information they provided to contribute to readers' behavior, knowledge, outcome expectations, and self-efficacy relating to pesticide exposure and protection. The literature collected varied from one-sided bulletins to one 50-page booklet. Eight of the 27 pieces included some reference to pesticide use and exposure risk for humans. These references varied from general statements, which included "with any crop protection chemical, always read and follow label instructions," to more specific instructions, such as "wear long-sleeved clothing and protective gloves when handling," "wash hands and face before eating or smoking and after applying," and "harmful if swallowed or absorbed through skin." Only *one* of these collected pieces of written information contained any content in Spanish- the primary language for most migrant farm workers in Georgia. Specifically, Dow Elano provided a booklet (6.5 pages, 8-$\frac{1}{2}$-by-11 inches in size, with 10–12 pitch type) about the herbicide "Broadstrike + Treflan with the following words in Spanish:

> PELIGRO: Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle.

The English translation of this message is as follows:

> DANGER: If you do not understand the label, find someone to explain it to you in detail.

With respect to personal protective devices and clothing, the field researchers found that three stores carried some variety of gloves labeled chemically resistant. One specific chemical manufacturer was observed to include protective gloves inside each box containing their product. Two stores had safety goggles, with one type being clearly marked for use with chemicals; when asked what the goggles in stock were designed to be used for the worker in the other store indicated that he "had no idea what they were for." Two stores had some type of protective device relating to face shields displayed for sale. One of the feed and farm supply stores was a representative of a major regional chain. One store carried the type of goggle designed for use when working around sawdust. The other store had replacement cartridges for masks to be worn when using chemicals, although there were no actual masks displayed; the mask cartridge label noted that it had been approved by National Institute for Occupational Safety and Health. One store had a product clearly promoted as being safety soap for use after mixing or applying chemicals. Three stores had boots labeled chemically resistant.

In addition to the observations of stores, the researchers visited nine area farms employing many dozens of migrant farm workers and observed the workers in the field to evaluate the pesticide exposure and protection practices of the workers. At one field, a group of 12 farm laborers were observed picking zucchini. Photographs of the workers support the field observation that the workers all wore long pants, and ten wore long-sleeved shirts. When handling zucchini, pickers wore rubber gloves like the ones sold to protect hands from hot water and detergent. One field researcher, himself Hispanic and fluent in Spanish, spoke with the workers who told him that they did not eat the zucchini from the fields unless it had been washed because of the chemicals on the vegetables. However, when the crew leader announced a break, the workers removed their gloves, ran to the fence at the side of the field just mere yards from where they were picking the crop, and ate the ripe wild plums growing there, seemingly unaware that the same chemicals sprayed on the zucchini fields would have also been sprayed on these wild fruits. Observations of eight other fields in which migrant farm laborers were at work produced similar findings. In one instance, a cropduster was spraying a peanut field fewer than 50 yards from workers who stood watching from the field's borders and waiting to return to work.

In-Depth Interviews

The analysis of the interviews of outreach workers revealed several overarching themes with regard to their levels of behavior, knowledge, outcome expectations, self-efficacy, and access to pesticide protection information and resources. First, there was variation in the outreach workers' knowledge levels. All outreach workers said that the workers should always wear protective gear when handling pesticides. Only three outreach workers mentioned specific things they have heard and tell the migrants to perform, such as changing out of clothes that have been worn in the fields when arriving at home, always washing hands before eating or washing clothes, never wearing the same clothes more than once without washing, wearing long sleeves and gloves, and washing and storing work clothes separately from other clothes.

In addition to the range of understanding demonstrated about pesticide protection, these advocates also demonstrated some resistance to persuading workers to protect themselves. When asked about reasons workers do not use gloves or other protective clothing, they most often cited high cost and discomfort associated with use, barriers to the performance of prevention practices. However, specifically with regard to wearing protective gloves, two outreach workers said that certain crops are ruined if picked with gloved hands, as the following quote illustrates:

> If you're picking cucumbers, you wear rubber gloves, because they have stickers on them and you will cut your hand and get all scraped up. But, if you are picking bell peppers, no, you wouldn't [wear gloves], because they are too delicate. It would break the skin [of the vegetable].

The outreach workers also distinctly conveyed the sense that pesticide exposure is a sensitive topic among this population. Although most of the respondents reported never seeing the migrant workers actually mixing or handling pesticides, several brought up illness from pesticide exposure as a major health problem. Most had some comment similar to one outreach worker's remark that, "We can't report the farmers for spraying; that would just get the workers in trouble and then the farmers wouldn't talk to us anymore."

The outreach workers also revealed that the migrant population is reticent about seeking formal care for their health, saying that the migrants rarely seek health care until their conditions are very serious, even life-threatening. One respondent reported that a migrant patient of hers developed skin cancer on his neck and delayed medical treatment for months, even attempting to remedy the problem by pouring battery acid on the tumor when it grew to considerable size. His explanation for delaying treatment was that he thought the tumor "would go away if he waited long enough." Another migrant patient who developed melanoma simply said he would return to Mexico to die rather than receive treatment for the disease. Other outreach workers identified general Hispanic and Indian (Guatemalan) cultural beliefs as hindering or even preventing clinical treatment of illnesses. One respondent specifically told the interviewer Hispanics "don't like to be touched" by strangers. Outreach workers also lacked confidence about their ability to promote pesticide awareness and protection due to gaps in their own awareness and understanding. They indicated that migrant farm workers have so many other problems, including other health problems such as dental care and alcoholism, pesticide exposure is a lower priority.

Outreach workers were asked to identify where they receive pesticide exposure information from, and how often they discuss health issues with the migrants. Respondents were specifically asked how often their physicians recommended self and clinical skin exams. Only one respondent reported her physician recommends skin self exams to detect signs of skin disease, including cancer. Only two of the outreach workers said their physician has ever recommended a clinical skin exam. Other sources of information in this category included material in the health departments pertaining to pesticide exposure. Some cited workshops about pesticide exposure, while others named nurses at the health departments, the Department of Labor, magazines, television advertisements, and brochures as sources of information.

Respondents were asked several questions regarding their roles as providers of health information to the migrants. In general, it was confirmed that they are indeed relied upon to provide health information, whether or not they feel qualified to do so. All respondents said they either "frequently" or "always" discuss health issues in general with the migrants. None had ever shown a migrant worker how to conduct a skin exam. One respondent commented,

> ... [the migrants] want us to diagnose them, you know, and they don't want to talk to anyone but us. We can't do that, though; I always tell them they need to see a doctor. I don't know how many of them actually do, but that's what I tell them to do. I'm not a doctor!

Face-to-Face Surveys

In response to a question about what crops they harvested, 51% of the migrant farm workers surveyed harvested cucumbers, 47% chile peppers, 34% squash, 33% tomatoes, 20% harvested cabbage, 12% harvested eggplant, 8% of the respondents harvested beans, 8% strawberries, 7% corn, 7% cotton, 7% watermelon, 6% onions, 4% green peppers, 3% oranges, 3% peanuts, and 3% sweet potatoes. With regard to pesticide application and use, cotton and oranges receive aerial spraying, whereas the rest of the crops listed require application of pesticides that take 48 hours to dissipate to safe levels for human handling.

Twenty-nine percent of the migrant farm workers surveyed worked in the fields all year; 14% said between 9 and 12 months of the year; 16% indicated 6 to 9 months; 10% said 3 to 6 months; and 5% said fewer than 3 months. Thirty percent of the migrant farm workers surveyed said that they always wear gloves when harvesting; 10% indicated sometimes; 32% said never. Sixty-one percent of the participants said they wear a hat when working, while 9% said they never do, and 3% said sometimes.

Thirty-nine different responses were given to the question, "What do you know about pesticides and working with pesticides?" The most frequent response was "nothing" ($n = 71$), followed by "they are dangerous" ($n = 46$). Far fewer respondents indicated that they "kill plagues on plants" ($n = 9$), "are harmful to humans" ($n = 8$), "can make you sick" ($n = 8$), "are bad for your health," and "are bad" ($n = 6$). Even fewer interviewees responded that they "kill worms and insects" ($n = 3$), "they spray and we have to work in it" ($n = 3$), "people die from them" ($n = 2$), "make plants grow" ($n = 2$), "damage the skin" ($n = 2$), "they're bad" ($n = 2$), "they're dangerous" ($n = 2$), "they're bad if you don't know how to handle them" ($n = 2$), and "there are safety classes in it" ($n = 2$). The following responses occurred only once: "they make you vomit," "you should wash after being around them," "they kill mosquitoes," "they damage your lungs," "they are poisonous," "they kill microorganisms," and "they're toxic."

Conclusion

This project revealed, through both face-to-face interviews with dozens of migrant farm workers and observations of workers in the fields, that migrant farm workers are habitually exposed to pesticides, which are used on most of the crops that they harvest. Migrant farm workers face unique social, economic, and political challenges to their existence as they strive to perform field labors associated with planting and harvesting this nation's food. In particular, exposure to pesticides causes an increased incidence of disease among migrant farm workers, with these ailments ranging from skin cancer to brain tumors. Despite the obvious risks associated with the work that they do, this formative evaluation of migrant farm workers' access to pesticide protection and information reveals a surprising lack of availability of information about protection from exposure to pesticides. This condition contributes to a general lack of understanding and effort by migrant health outreach workers to promote pesticide protection awareness and practices to migrant farm workers. Together, the absence of environmental support in the form of available and affordable products and information, and the absence of social support in the form of outreach workers' promotion of pesticide awareness and protection to migrant farm workers generates a deficit in farm workers' current knowledge levels and practices regarding pesticides. Workers appear, for example, to lack specific understanding about the reach of aerial pesticide spraying. The latter was evident in the inconsistency observed between workers' statements that they avoid eating the vegetables they harvest due to the pesticides on them, although just moments later, the workers consumed wild fruit on fences lining the fields where the workers were harvesting-fruit obviously contaminated by pesticides sprayed on the fields.

The lack of pesticide protection information, and the need for such materials to be available in Spanish, represents a very wide gap between an ideal situation and the present reality, both for farmers who employ migrants and for migrant health outreach workers whose job entails acting as advocates for migrants' health and

health care. These employers and outreach workers have no readily accessible and appropriate means to communicate pesticide protection information to migrant farm workers, the majority of whom speak Spanish. Researchers have found that Mexican Americans prefer Spanish language television, radio, newspapers, and magazines over similar media in English, as Spanish language media serve as news and information sources about the local community and country of origin, and the editorial policy of Spanish media is consistent with conversative Hispanic cultural values emphasizing the importance of harmony with family (Ramirez & McAlister, 1988). Some organizations are expending considerable effort to design pesticide awareness media in Spanish, including the Environmental Protection Agency with its guide for agricultural workers on protecting themselves from pesticides (U.S. Government Printing Office, July 1993). Yet, even evaluation of this guide, using interviews and focus group discussions with migrant farmworkers (Leahy, 1994), revealed the need to avoid using English words in the visual presentations and to be consistent in visually depicting workers dressed in the ways that are promoted in the text of the message. It is also imperative that the messages convey the reach of pesticides to migrant farm workers, a gap evident in all messages reviewed.

Beyond the need to design more appropriate messages regarding pesticide use and protection, the results of this formative evaluation also provide some insight about the impact of culture on how and when outreach workers, as social network members intended to function as health care advocates, might actually sometimes serve in a seemingly adversarial role. This unfortunate situation is likely to occur in part due to gaps in the advocates' understanding and a lack of confidence about their abilities to function as health information sources and positive role models. This provides some insight about the need to enlarge the concept of self-efficacy in reference to campaign communication and social influence situations. Self-efficacy is traditionally conceptualized as a personal construct, but the findings of this project clearly suggest that personal self-efficacy will carry spillover effects into professional domains. If one lacks confidence about one's own ability to understand and perform behaviors associated with a particular situation, such as pesticide use, one's confidence about informing others and promoting protective practices is likely to be affected. Thus, personal self-efficacy should be directly associated with professional self-efficacy; individuals who are confident in their own ability to perform a practice will feel confident about their ability to promote the practice to others, while individuals who feel less confident about their ability to perform a practice will be less likely to have confidence about promoting the practice to others. This may provide one explanation for why health caregivers who smoke are less likely to counsel patients to stop smoking, or caregivers who themselves fail to exercise regularly may seldom advise others to exercise regularly, and other gaps in health caregivers' promotion efforts regarding disease prevention. To bridge the observed gap between outreach workers' personal and professional self-efficacy regarding pesticide awareness and protection, a seminar to address the issue was developed and delivered to the outreach workers, with the formative evaluation guiding the selection and development of the training materials.

An absence of available and affordable protective devices, such as gloves, goggles, boots, and face shields, further reduces the likelihood that migrant farm workers will be adequately informed or protected when using pesticides. Affordable protective clothing, gloves, and goggles must not only be available, however, but should be modeled by the crew leaders who direct the migrant farm workers' activities. This suggests another important audience to be addressed in efforts to bridge

the gaps identified between strategies available for reducing risk associated with pesticide exposure and migrant farm workers' actual pesticide awareness and protection. The crew leaders, who are generally members of the same cultural group as the migrant farm laborers, may share the cultural view that use of protective devices such as gloves will harm the crops being harvested and lead to unemployment; health and safety concerns may emerge a distant second behind the desire to remain gainfully employed. With greater acculturation and socioeconomic status, however, more interest in personal health and well-being may emerge (e.g., Hazuda, Haffner, Stern, & Eifler, 1988). Thus, crew leaders, because they are likely to be more acculturated due to their ability to speak English and negotiate with farmers about work assignments, may be more interested in personal health and well-being than migrant farm workers who are less acculturated. Health communication designed to gain crew leaders' support for and understanding of pesticide protection practices, therefore, is a vital bridge to promoting greater understanding and awareness about pesticide exposure to migrant farm workers. Crew leaders may influence migrant farm workers by modeling appropriate protective practices and recommending the behaviors to others. The local agricultural extension service offered pesticide protection seminars for farmers and crew leaders at the feed and seed stores, a further opportunity to enhance understanding of and support for migrant farm workers' pesticide protection.

Plans to involve retailers, at both packing and distribution points, were developed as an additional way to inform, change, and reinforce behaviors that could reduce the incidence of pesticide sickness among migrant farm workers, as well as the long-term health care costs and short-term labor and production costs associated with chemical exposure. Farming retailers offer information and support with regard to tractor safety, so extending these efforts to other domains is a rather natural outgrowth of past actions. Moreover, one final audience to be addressed in the Cultivando Buenos Habitos campaign, in addition to the migrant farm workers themselves, their public health advocates (MHP outreach workers), on-the-job supervisors (crew leaders), and retailers, is the public at large. Consumers of fruits and vegetables appear to demand the extensive use of pesticides to reduce pest infestation in order to produce perfect fruits and vegetables. Use of some recommended protective devices, including gloves, was reported to be avoided, as migrant health outreach workers and the farm workers themselves feared the bruising that may be caused by handling some crops with gloved hands. This suggests that consumers' demand for perfect fruits and vegetables may have reached a level beyond the bounds of reason. Conversations with parents and grandparents, for example, might well reveal a time when bruising was the norm rather than the exception, and consumers did not judge fruits and vegetables as being unfit for consumption because they were bruised. One simply chose fruits and vegetables with the aim of avoiding those with the largest or the most bruises; the bruises present were then cut out of the food before consuming it. Home gardeners still utilize these practices, regarding their home grown products as the best, not the worst food available for their tables. Thus, the public, too, must be informed about the outcomes associated with their quest for absolute perfection in the fruit and vegetable aisle of their local supermarkets. Perhaps, with time, this may contribute to some turnabout in attitudes and practices.

In sum, as a result of this formative evaluation's assessment of the availability and affordability of pesticide protection information and products, the Cultivando Buenos Habitos campaign plan developed around the goals of enabling migrant

farm workers to protect themselves when using pesticides through the increase of both environmental and social support for these practices. To accomplish this aim, a program was created for training and educating migrant health outreach workers in relation to pesticide exposure, a bridge to reduce the gap in their understanding, increase their credibility and confidence as information sources, and act as role models for migrant farm workers. Pilot messages were developed for crew leaders and outreach workers to use in conversations with migrant farm workers about pesticide use. Contacts were made with pesticide producers in efforts to obtain their cooperation with changes in message design. The goals of the resultant demonstration project are to increase outreach workers' knowledge about pesticide protection, enhance positive outcome expectancies of recommended practices associated with pesticide protection, improve perceptions of self-efficacy about their ability to both perform and promote recommended practices associated with pesticide protection, and improve actual performance of recommended practices. In turn, outreach workers are expected to communicate with migrant farm workers about the best methods of protecting themselves from pesticides, making the real situation in which migrant farm workers labor close to an ideal one with regard to pesticide exposure. Social cognitive theory (Bandura, 1986) focuses upon the assumption that "to achieve self-directed change, people need to be given not only reasons to alter risky habits but also the means, resources and social supports to do so" (Bandura, 1992, p. 90). With the lessons learned from this formative evaluation study, it is hoped that the Cultivando Buenos Habitos campaign will achieve these goals.

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