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Implementation Evaluation of a Culturally Competent Eye Injury Prevention Program for Citrus Workers in a Florida Migrant Community

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Abstract

Background: The Partnership for Citrus Worker Health (PCWH) is a coalition that connects academic institutions, public health agencies, industry and community-based organizations for implementation of an eye safety pilot project with citrus workers using the Camp Health Aide (CHA) model.

Objectives: This project was an implementation evaluation of an eye safety curriculum using modeling and peer-to-peer education among Mexican migrant citrus workers in a south-west Florida community to increase positive perceptions toward the use of safety eyewear and reduce occupational eye injuries.

Methods: CHAs have been employed and trained in eye safety and health during harvesting seasons since 2004. Field observations, focus group interviews, and written questionnaires assessed program implementation and initial outcomes.

Results: There was an increase in positive perceptions toward use of safety eyewear between 2004 and 2005. Evaluation of training suggested ways to improve the curriculum. The modest literacy level of the CHAs necessitated some redesign of the curriculum and its implementation (e.g., introduction of and more reliance on use of training posters).

Conclusions: PCWH benefited by extensive documentation of the training and supervision, a pilot project that demonstrated the potential effectiveness of CHAs, and having a well-defined target population of citrus workers ($n = 427$). Future research can rigorously test the effectiveness of CHAs in reducing eye injuries among citrus workers.

Keywords

Farm workers, Hispanic workers, camp health aides, *promotores de salud*, safety eyewear, occupational health

The use of community health workers (CHW) to intervene in the health problems of the poor and underserved continues to gain proponents in community-based organizations, community health centers, and academia. CHWs link members of the community, typically economically disadvantaged, medically underserved, and hard-to-reach populations, with health care providers and services. Traditionally, such partnerships between CHWs and health care providers were found mainly in community health centers, public health departments, and other health centers focused on specific vulnerable populations, such as homeless persons and migrant workers.¹ However, it has become increasingly common for CHW programs to be linked with

academic medical centers and managed care organizations.^{2–7} Swider⁸ has argued that CHWs increase access to health care in hard-to-reach populations, improve the quality of care, reduce the costs of care, and promote culturally appropriate health education.

For this project in southwestern Florida, a uniquely trained group of CHWs was employed to improve citrus worker health and to reduce health care costs by treating eye injuries in citrus groves or work camps before they became chronic or more severely acute. In addition, CHWs attempted to improve access to health care by making referrals to community health centers in the event of non-work-related injuries or conditions. These CHWs were known as camp health aides (CHA), peers of

other citrus harvesters who work in agricultural settings and reside in migrant work camps.

The agricultural workplace is a much neglected area for health promotion interventions.⁹ However, the proliferation of *promotores de salud* (“health promoters”) and accompanying programs for farm workers in the past few decades is an exception to the previous focus on heavy industry in occupational health and medicine.^{2,8,10–14} Farm workers are considered a “special population” by the health care community because they have higher risk exposures and lower overall health status than the general population, and are more likely to under-report injuries in the workplace.¹⁵ One such pressing health concern is the problem of eye injuries in agricultural work, which ranks among the most common occupational injuries but one for which there have been few studies to identify effective preventive interventions.^{16,17} The use of CHAs to intervene in this area of farm worker health is relatively new, as evidenced by the recently formed Farmworker Eye Network, a group dedicated to the promotion of eye care, including advocating the use of safety eyewear among farm workers.¹²

Farm workers are exposed to multiple eye irritants, such as dust, sand, branches, allergenic agents, pesticides, wind, water, and insects.¹² These foreign objects can cause infections, allergic reactions, eye irritations, and corneal and other eye trauma. Excessive sun exposure and chronic eye irritation may lead to cataracts, a clouding of the eye lens, and pterygium, a growth that obstructs the cornea. Specific to citrus harvesting, serious eye abrasions can be caused by lacerations from branches and leaves. Untreated chronic eye problems are precursors for permanent damage, impairment, and blindness. Quandt et al.¹⁷ estimate that 90% of agriculture-related eye injuries could be prevented with the proper use of protective eyewear. Occupational eye injuries are a particular problem in the Latino migrant and seasonal worker population, an economically disenfranchised group with over half living below the poverty line. Many farm workers work without legal documentation and face drastic financial hardships if unable to work because of disability.¹⁵

THE PARTNERSHIP FOR CITRUS WORKER HEALTH

The Partnership for Citrus Worker Health (PCWH) is a community-based coalition founded in 2001 by the Florida Prevention Research Center (FPRC) at the University of South

Florida and the Farmworker Association of Florida (FWAF), a nonprofit advocacy group. The PCWH oversees a pilot project to reduce the occurrence and severity of occupational eye injuries among citrus workers using a promising new social change framework known as community-based prevention marketing (CBPM). CBPM is a community-directed social change process that applies behavioral theories and marketing concepts and techniques to design, implement, and evaluate public health programs.¹⁸

Researchers from the University of South Florida College of Public Health worked closely with the FWAF to establish a board of directors, called the PCWH. The PCWH is composed of farm workers, representatives from large citrus producers, Collier County Health Department staff and administrators, clinicians, farm worker advocates, and social service personnel. The PCWH meets bimonthly at the FWAF offices in Collier County and is open to the public. Following the CBPM framework, the PCWH (1) developed a community health profile of the citrus worker population in Collier and Hendry counties in southwestern Florida; (2) selected eye injuries as the target problem for their first project; and (3) conducted marketing research with workers to identify strategies for preventing eye injuries. The resulting marketing strategy encourages the use of safety eyewear protection using CHAs as models, advocates, and educators.^{19,20}

This paper aims to (1) describe the CHA project training curriculum as a component of the PCWH project; (2) specify the educational and training objectives, as well as the strategies used to deliver the educational content; (3) explain how the educational activities were implemented; (4) assess the results of the implementation evaluation; and (5) offer recommendations for future use of the curriculum.

METHODS

Target Population Demographics

The target population of the CHA project intervention was composed principally of Mexican migrant farm workers harvesting citrus in a two-county area of southwest Florida. Several different citrus companies, each of which employs between 50 and 500 seasonal citrus workers (mostly men), also employed the CHAs who participated in this pilot study over a 2-year period. Harvesting occurs from October to June, with

a peak period between December and May. A convenience sample of workers who completed questionnaires about the project had the following demographic characteristics (Table 1): monolingual Spanish speakers; majority married with wives and family in Mexico, primarily southern Mexico; 98% of Mexican origin (2% from Central America); average age of 30 years; 6 or fewer years of formal education; and migrant—traveling to different regions of the United States, depending on work availability and harvest season. The citrus workers surveyed averaged about four seasons of harvesting experience, but about one third of them were first-year citrus workers. The 11 individual CHAs who participated in the project over 2 years constituted the proximal target population of the CHA curriculum. They, in turn, transmitted this information to their peers in both group education sessions and through individual encounters. This study was approved by the Institutional Review Board at the University of South Florida.

Formative Research Studies

Research conducted in 2002 and 2003 utilized brief surveys with 58 citrus workers awaiting immigration services, and eight focus groups with a total of 55 citrus workers. In the surveys, 35% responded that eye injuries and irritations were the most common mishaps in the citrus groves. Focus group research conducted in the homes and yards of citrus worker labor camps revealed the in-depth knowledge workers had of the risks of eye injuries. Most accepted that eye irritation and injury were part of the usual risk of citrus harvesting, and several had experienced serious injuries that forced them to miss work. Citrus workers expressed resistance to using safety glasses because they were not accustomed to them. An adherence to eye safety was associated with a loss of masculinity—*machismo*—among citrus workers. Instead, workers preferred to wear bandanas or caps for protection. Even when the employer provided safety eyewear, workers who participated in these early focus groups reported not using them. Whereas most workers agreed that there were potential benefits to wearing safety glasses, in practice, the perceived costs of wearing the protective eyewear outweighed the benefits. Some of these perceived costs included the expense, excess perspiration, “fogging up” of the lenses, distortion of vision, and general discomfort, all resulting in the slowing down of the citrus

harvesting process (thereby adversely affecting their earning potential). The formative research aided in the development of a marketing plan to influence protective eyewear use and reduce injury rates among citrus workers by treating them as the primary audience for both the core product (preventing eye injuries) and the actual product (wearing safety glasses).

CHA Curriculum and Objectives for Education and Training

To overcome these barriers to the adoption of safety eyewear, the CHA curriculum was developed and implemented in early 2004. The initial curriculum was derived entirely from the materials provided by Migrant Health Promotion (MHP), a nonprofit organization based in Michigan with more than two decades of experience launching *promotor(a)* programs in Michigan, Texas, and Colorado. The MHP curriculum materials used by the Florida CHA project were developed originally for an Illinois-based project to reduce eye injuries among Latino farm workers.¹² The MHP curriculum employs a popular education approach of interactive learning to make the lessons less didactic and more participatory in nature.²¹ Each session begins with a *dinámica*, or icebreaker, to stimulate learners at the beginning of the lesson, and concludes with another *dinámica* at the end to facilitate review of the material and to evaluate the lesson.

The training curriculum was adapted from the *Camp Health Aide Manual* and the *Eye Health Training Kit*, materials developed by MHP.^{22, 23} These materials are comprehensive teaching manuals in English and Spanish with instructor notes, examples of *dinámicas*, reporting forms, and educational materials. The training included the following key elements:

Table 1. Sociodemographic data from Questionnaire for Safety Glasses Trial, 2004–2005

	2004 (n = 74)	2005 (n = 76)
Age (Yrs)	30.5 ± 10.8	32.4 ± 11.3
Education (Yrs)	6.0 ± 3.1	4.9 ± 3.2
Number of Harvesting Seasons	4.0 ± 5.5	3.6 ± 4.8
Married (%)	62.2	77.6
Experienced Harvesters* (%)	64.9	64.5
Mexican Origin (%)	98.5	97.4

Values are presented as means ± standard deviation unless otherwise noted.

* Two or more seasons harvesting citrus.

project overview and explanation; roles and responsibilities of CHAs (Appendix A); frequently occurring eye injuries and illnesses in agricultural work; proper use of reporting forms and note-taking methods for educational and eye safety encounters; use of popular education techniques and facilitation skills for group education sessions; and resources for co-workers to identify local health providers and community health centers that serve farm workers.

The eye safety training curriculum was used by the CHAs to train citrus workers on their own work teams, primarily employing the flipcharts and *fotonovelas* (comic book-style educational pamphlets). The main drawback of the *Eye Safety Manual* was that it required at least a moderate level of literacy. Consequently, materials were adapted with the help of the CHAs to be more interactive and visual, using educational training posters that allowed easier understanding by participants with lower levels of literacy (Appendix B).

With a subcontract from the FPRC, the FWAF employed the CHAs and a bilingual project coordinator to supervise the training. CHAs had to meet the following criteria to be hired for the part-time position (14 hours/week at \$8/hour): experience working in citrus harvesting; residence in a work camp with their crew members; consistent work with the same crew; and interest in health and safety.

Recruitment was assisted by recommendations from fellow workers, thereby positioning the CHA for a leadership role. CHAs were required to perform the following specific duties as stipulations of their employment: attend all training sessions, wear (“model” the behavior) safety glasses at all times during citrus harvesting, distribute safety glasses to co-workers, and encourage their use. In addition, they were expected to attend weekly meetings with the project coordinator to report individual educational encounters completed, eye washings, or minor first aid performed, field observations noted, and group education sessions facilitated.

The number of CHAs increased from six in 2004 to seven in 2005; however, only two of the original six CHAs continued their jobs into the second harvesting year because the project narrowed its geographic focus to work with fewer citrus companies, and some of the CHAs did not return to the same groves during the second year. The decision to work with only two companies in the second year was made based on the findings from year 1, which concluded that there were too

many logistical and financial challenges involved in working with multiple companies spanning a large area. In 2004, MHP conducted a 2-day training session for project staff, which included the principal supervisor or field coordinator, the project coordinator, and three staff persons from the FWAF. The training sessions introduced the *Camp Health Aide Model*, popular education techniques, roles and responsibilities of project staff and CHAs, use of training materials, and group facilitation techniques. Project staff members subsequently administered five additional class sessions, for a total of 20 hours of training.

In 2005, the second year of the program, MHP conducted a shorter, 1-day training session. Half of the day was dedicated to training new project staff, and the second half focused on the CHAs themselves. The CHAs’ participation in training sessions and their evaluation of the training program were consistently positive. After the initial MHP training, there were nine additional training sessions facilitated by project staff for a total of 25 hours of training. The extra training time was necessary for CHAs to participate in a full-day first aid and cardiopulmonary resuscitation class. This class was added as a result of feedback from CHAs who participated in the first year’s project evaluation.

At the conclusion of the 2006 harvest season, the third year of the project, the project coordinator developed a curriculum manual to improve consistency in how training materials were used and the program was implemented. The manual clearly defines the roles of the project coordinator and the CHAs, the steps for implementing the curriculum, and examples of exercises and lesson plans for the classes. The manual also outlines an evaluation component including relevant measures.

Evaluation Methods

The project team developed a comprehensive evaluation plan, which included both impact and process evaluation. Impact evaluation consisted of observing use of safety glasses in the field and conducting brief interviews with workers at the end of the harvesting season to assess perceived benefits and barriers to using glasses. Process evaluation focused on monitoring implementation fidelity and assessing the feasibility of the pilot project by observing CHAs and conducting focus groups with workers and CHAs (separately) at the end of the harvest season.²⁴ Evaluation of the CHA pilot

project intervention in 2004 and 2005 examined 11 crews total (approximately 387 citrus workers) with 11 CHAs. The data collection methods for 2004 and 2005 included three focus group sessions with CHAs (one in 2004 and two in 2005; Appendix C) and two focus groups with citrus workers (one each year); 74 workers completed questionnaires in 2004 and 76 workers completed questionnaires in 2005 (Appendix D). Finally, there were 18 days of field observations of citrus workers for both years combined. After calculating descriptive statistics for sociodemographic data, the Pearson χ^2 tests of association were used for the categorical data to gauge changes in perception of the glasses from 2004 to 2005. Moreover, the mean number of perceived tubs of oranges that could be harvested both with and without glasses (number of tubs with glasses minus number of tubs without glasses) was calculated to compare the means from 2004 with 2005 using the Wilcoxon rank-sum test, a nonparametric equivalent of the independent samples *t*-test. A baseline safety glasses usage rate of less than 1% was established in 2004. Comparison groups were not used to evaluate the pilot project because of time, budgetary, and access restrictions. As a feasibility study, control groups were not part of the research design; however, current research is utilizing a randomized control trial design to estimate the intervention's effect on safety eyewear usage.

The project coordinator monitored the CHAs by observing actual usage of safety eyewear in the citrus groves with work crews, and recording the following information: number of eyewash bottles distributed; number of eye washings performed by CHAs; number of safety glasses distributed; and number of individual eye education encounters and group education sessions performed by CHAs. The combination of process and impact data made it possible to compare the number of workers reached and changes in worker perceptions and attitudes between 2004 and 2005.

RESULTS

Evaluation Results

Project data for 2004 and 2005 demonstrated an increase in the number of CHAs, number of workers reached by the intervention, number of eye washings performed by CHAs, and length of training hours (Table 2). Safety glasses usage rates were based on 18 field observations of 277 workers in

2004 and 2005. Usage rates may have been markedly lower when observed in the early morning hours because of higher humidity. Over the two harvest seasons, the intervention reached approximately 427 citrus workers; workers on crews without CHAs as well as those with CHAs requested safety glasses and/or eye washings from CHAs. These workers either had eye washings performed, participated in group education activities, or had some other educational contact with the CHAs.

Survey results demonstrated that the CHAs helped their fellow workers with eye washings and other injury-related activities (e.g., splinter extractions, minor sprains). In 2005, a higher percentage of CHAs helped with eye drops (74%) than in 2004 (64%). For both 2004 and 2005, more than 95% of questionnaire respondents replied that the CHAs spoke to them about eye injuries at least once, and approximately 50% reported that they received the education messages five or more times. In 2004, 80% of respondents were concerned about the consequences of eye-related injuries, increasing to 88% in 2005, signifying that eye injuries were a major concern for citrus workers in general and even more so after contact with CHAs.

The questionnaires offered other evidence of increased program penetration from 2004 to 2005. For instance, there were some attitudinal changes in citrus workers' perceptions concerning the effect of wearing safety glasses on personal harvesting productivity, speed of harvesting, harvesting without worry, and experience with eye irritation and eye fatigue

Table 2. Descriptive Data for Camp Health Aide (CHA) Program from Project Coordinators' Final Reports, 2004–2005

	2004	2005
Health Promoters	6	7
Crews Represented	6	5
Companies Represented	4	2
Workers Reached by Project	130	297
Observed Safety Glasses Usage (%)	37	34
Eye Wash Bottles Distributed	171	165
Eye Washings by Chas	90	137
CHA Training Sessions	5	8
Total Hours of Training	20	25

(Table 3). Complaints about safety glasses declined in 2005, with almost three times as many citrus workers reporting “no complaints” about wearing the safety glasses compared with those with complaints in 2004 (43.3%; $P < .01$). There was also a significant increase in 2005 in the percentage of citrus workers who did not experience dirt in the eyes (38.7%; $P < .05$), who perceived that they could harvest more citrus with glasses (27.3%; $P < .05$), and who perceived that they could harvest citrus faster with glasses (31.7%; $P < .05$). Finally, the Wilcoxon rank-sum test revealed a significant difference between the number of perceived tubs of oranges that could be harvested with glasses compared to without glasses between 2004 (−0.05) and 2005 (1.1; $U = 1036.0$; exact $P = .00$), demonstrating a more positive perception toward the glasses and harvesting productivity in 2005. Based on the field observations, safety eyewear use increased from a negligible percentage at baseline ($< 1\%$), to between 34% and 37% use at the end of the pilot study. Possible explanations for improved perceptions toward the safety glasses include more skilled CHAs (two CHAs from 2004 continued working on the project in 2005), greater support by citrus companies (e.g., increased numbers of presentations about the project to workers), and repetition and reinforcement of messages to wear glasses over time.

Specific Recommendations

The project was closely monitored through close supervision of CHAs and frequent staff meetings, thereby facilitat-

ing the implementation of necessary changes as the project evolved, a standard practice for new programs.²⁵ Project staff were careful to explain that they did not work for citrus companies, and that neither CHAs nor other workers would be penalized if they refused to participate in the project. Project staff not involved with the field activities produced an internal working document evaluating the curriculum based on the project reports and focus group results. Specific recommendations included: (1) modifying the evaluation materials to be more user friendly, (2) continuing use of field notebooks by CHAs for recording field activities, and (3) integrating a process evaluation component into each training session with the CHAs. A focus group session with the CHAs in 2005 identified the training from the MHP visit as one of the highlights of the training curriculum, because of its interactivity and the expertise of the MHP training facilitator. Thus, such expert-led interactive sessions will continue in the preparation of CHAs for their important role in the project. Other recommendations stemming from more recent experience with the project include: (1) developing a separate curriculum for the crew leaders to enhance their roles as motivators of behavior change among workers, (2) working with the citrus companies more closely in the planning process and shifting responsibility of CHA salary disbursement from the FWAF to the company, and (3) strengthening collaborative trust-building activities with other community partners such as the local health department for health screenings and to increase the project's visibility.

Lessons Learned

The tracking forms used by CHAs during the course of their employment were problematic because of literacy challenges. These documents included the observation records form, the eye safety encounters form, and the group presentation form. In 2005, most of the CHAs were able to use the observation records form and the group presentation form. However, the eye safety encounters form was deemed too complex because of the need to complete a matrix and use appropriate injury codes. In lieu of that form, CHAs were encouraged to use the field notebooks to record how many workers they educated about eye safety and to document any eye washings performed. One CHA commented, “the most important thing was that [they]

Table 3. Questionnaire Results for Safety Glasses Trial, 2004–2005

	2004, % (n = 74)	2005, % (n = 76)
With Glasses, Harvest More*	39.2	53.9
With Glasses, Harvest Faster*	40.6	60.0
With Glasses, Harvest Without Worry	81.1	92.1
With Glasses, Eyes Less Tired	85.1	94.7
No Complaints About the Glasses**	12.2	30.3
Would You Buy Glasses	83.8	89.5
Dirt in Eyes Last Week*	40.5	23.7
Difference in Filling Tubs*** §	−0.5	1.1

§ Mean perceived number of tubs of oranges harvested with glasses—number of tubs harvested without glasses.

* $p < .05$; ** $p < .01$; *** $p < .001$.

reported what [they] did,” meaning that they kept records of their CHA activities.

After the first two seasons of implementing the pilot project, a process evaluation protocol was developed and assessed during the 2005–2006 harvest season. In 2006, the “evaluation” was explained to the CHAs as having the following objectives: improving CHA performance; identifying what worked well and what could be improved; reporting the project’s progress; and learning more about oneself.

Each CHA conducted a self-assessment during the group training sessions. The CHAs stressed the need to review the materials on eye illnesses and injuries, because these topics required study for comprehension. Current strategies for process evaluations by project staff include teach-backs (CHAs tell the group something they have learned during the training session) and role-playing (CHAs act out how they would perform in hypothetical scenarios). The project coordinator developed a series of nine lesson plans with an evaluation component to better structure the curriculum and ensure coverage of the most salient topics. Future efforts include a more thorough impact evaluation component that will enable project staff to measure the changes in knowledge, attitudes, and skills among the CHAs.

The popular education component of the curriculum continues to be revised. Ethnographic research has shown that a revised curriculum should be based on popular education principles that are linked with workers’ life experiences. These didactic techniques succeed by raising the citrus worker’s awareness of the importance of eye safety. This realization occurs after the worker makes the connection between not working because of an eye injury and the importance of supporting family members monetarily back in Mexico. The improved version of the curriculum will include domains of health and safety that are of relevance to citrus workers, such as prevention of sexually transmitted infections, personal hygiene, and other types of work injuries (e.g., ladder accidents, heat exhaustion, and insect bites). Although expanded, the curriculum would remain focused on eye safety.

Main Conclusions

The implementation of the eye safety pilot project suggests that CHAs act as positive role models and conduits for CPBM to educate fellow workers about eye safety in the citrus groves and encourage workers to have a positive perception toward safety eyewear. This project also illustrates the potential of CBPM to tailor evidence-based interventions such as the Michigan/Illinois *Promotor de Salud* project for use with special populations such as citrus workers.¹² CBPM has also been shown to be a method for communities to use in strategic planning efforts and the designing of new interventions.¹⁸

Promising results stem from community, academic, and industry support and collaboration. The future goal of the project is to sustain the CHA model with funding from citrus companies and to evaluate the implementation of these programs. We plan to work closely with a large company in 2008 to institutionalize the program and assess its cost effectiveness. More thorough, systematic outcome evaluation is needed to determine the effectiveness of CHAs in increasing safety eyewear use, and in turn, reducing eye injuries in this special population. Nevertheless, this implementation research, including cultural tailoring, suggests that the curriculum is appropriate for this population and problem, and may have utility in other related agricultural settings.

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Appendix A. El Papel del Promotor (The Role of the Promoter/Camp Health Aide)

- El propósito de los promotores es de ayudar a la gente de su comunidad.
- Son miembros de la comunidad quienes promueven la salud.
- Usan la educación popular.
- Somos todos maestros y también alumnos.
- Todos sabemos mucho por nuestras experiencias.
- La meta es de promover la salud.
- Proveen liderazgo en la comunidad.
- Proveen un enlace entre los naranjeros y los servicios de salud.
- Educan a la gente sobre la salud de los ojos y sobre la higiene.
- Promueven el uso de los lentes de seguridad.
- Mantienen apuntes sobre las observaciones y otras actividades.
- The aim of the promoters is to help the people in the community.
- Members of the community promote health.
- Use popular education.
- We are all teachers and also students.
- We all know a lot about our experiences.
- The goal is to promote health.
- Provide leadership in the community.
- Provide a link between citrus workers and health services.
- Educate the people about eye health and hygiene.
- Promote the use of safety eyewear.
- Maintain field notes about your observations and activities.

Appendix B. Example of an Eye Safety Training Poster.



English translation:
Protect your eyes!
If dirt gets in your eye, remember the following:



Use water to irrigate the eye.



Don't touch the eye or the borders of the eyelids.



Irrigate the eye for 5 minutes to eliminate the chemicals that could have entered the eye.



Hold the eye open, using your fingers to extend the eyelids open.



Protect your eyes!

Courtesy of Rural Women's Health Project,
www.rwhp.org

1. What do you think of the overall goal of this project?
2. Is eye protection a critical health problem for you and other farmworkers?
3. Would another type of project have been more worthwhile?
4. Did you understand the objectives of the project? Did you understand your role in the project?
5. What, if anything, did the residents and/or farmworkers learn from this project?
6. Probes: What do you think most helped people decide to wear them (i.e., distributing them, selecting styles, receiving health education, seeing more of their co-workers or supervisors wear them)?
7. Why are people not wearing them?
8. Did you notice anything different when you were wearing them (eyes more/less irritated, etc.)?
9. Evaluate the training you received to carry out the program (i.e., about the forms, the training on eye illnesses and injuries).
10. Was it difficult or easy to get workers to participate?
11. What do you think were the best aspects of the project?
12. What things should be improved for next year?
13. How did this project affect your other work as a harvester?
14. What other health or safety problems have a big impact on the community? (Remember to think about co-workers, families of co-workers, and people in your camp.)
15. Is there anything we have not talked about yet?

Appendix D. Questionnaire for Safety Glasses Trial (English Version, 2005)

1. Before the promoter gave you the safety glasses, what did you think about the idea of using them?
2. What information did he give you?
3. How many times did he speak to you about eye safety?
4. Did he give you other help or advice about any other thing related to your health? About what?
 - a. Did he help you with eye drops?
 - b. Did he help you with splinters?
 - c. Did he help you with sprains?
 - d. Other answer?
5. Did you like the color of the lenses?
6. The first day, how long did you use the lenses?
7. After the first day, how long did you use the glasses?
8. Do you think it is better to use the glasses during certain hours or times of the day? Which hours or times? Are there certain hours or times of the day that are bad to use them? Why or why not?
9. Does water fall from the trees in your eyes? Does it irritate your eyes?
10. Before the promoter gave you the safety glasses, were you worried about accidents or eye injuries? Why or why not?
11. If a worker asked you if you should or should not wear safety glasses, what would you advise?
12. If the respondent did not recommend: What would have to change for you to recommend them?
13. If the respondent did recommend: What would you say to convince or encourage others to use the glasses? (Circle the appropriate response.)
 - a. The glasses protect sight.
 - b. You can pick faster.
 - c. You can pick without worry.
 - d. Other answer.
14. Do you think the safety glasses protect against illnesses or eye problems when you get older? Against what problems exactly?
15. Do you think the glasses cause you to be less tired or have less irritated eyes at the end of the day?
16. Do you think the crew leader thinks it is good that you wear the glasses? Why? Do you think the company thinks it is good that you wear the glasses? Why?
17. What is it that you like most about the glasses?
18. Do you think that, when you wear the glasses, you can pick without worrying about your eyes?
19. Do you think that when you wear the glasses, you can pick faster?
20. Do you think that when you wear the glasses, less debris falls in your eyes?
21. Do you think that when you wear the glasses, your eyes are less tired at the end of the day?
22. Do you think that when you wear the glasses, your eyes are less red and irritated at the end of the day?
23. What are the things that you don't like about the glasses? (Circle the appropriate response.)
 - a. They fog up.
 - b. They get dirty.
 - c. You can't see well.
 - d. They make me hotter.
 - e. They scratch too easily.
 - f. They are uncomfortable.
 - g. I lose time at work because I have to clean them (therefore I lose money).
 - h. I don't think eye injuries are serious or important.
24. What other injuries do you worry about more than eye injuries?

Appendix continues

Appendix D *continued*. Questionnaire for Safety Glasses Trial (English Version, 2005)

25. Would you buy these safety glasses if they were to be sold in a store?
26. What would you pay for them?
27. What would you do if the company made it mandatory to wear the glasses?
28. Would you work for another company for this reason?
29. How many bins of oranges do you pick without wearing glasses? (List)
 - a. The number of bins in a bad grove.
 - b. The number of bins in a good grove (a lot of fruit).
 - c. The number of bins in an average type of grove.
30. How many bins of oranges do you pick when you are wearing glasses? More, less, the same?
31. Do you have anything more to say about the use of safety glasses?

Questions About Eye Injuries: Extraneous Objects in the Eyes

32. Before using the glasses, how frequently did sand, debris, or dust fall in your eyes?
33. After using the glasses, how frequently did sand, debris, or dust fall in your eyes?
34. Did something occur during the last week? (Circle the appropriate response.)
 - a. Yes.
 - b. No.
 - c. No, because I used glasses.
35. When this occurred, did you report it to a supervisor?
 - a. Yes.
 - b. No.
 - c. Why did you not report it?
36. What did your supervisor do when you reported it? (Circle the appropriate response.)
 - a. He gave me drops to wash out my eyes.
 - b. He washed my eyes.
 - c. He gave me a ride to the clinic.
 - d. He did not do anything.
37. Have you visited a clinic or doctor sometime to treat your eyes because of debris or dust falling in your eyes? (Circle the appropriate response.)
 - a. The supervisor did not want to take me.
 - b. I did not think it was serious.
 - c. I did not have money to go alone.
 - d. I was worried about my documents.
38. If respondent answers "yes", how did they treat you at the doctor's office?
 - a. How much did it cost?
 - b. How long did it take?
39. Have you bought eye drops sometime to cure irritation or for injuries from debris or dust?
40. Are there some days when there is more dust, debris, or sand? Why?

Branch Injuries

41. Have you ever been hit by a branch in the eye? How did it happen?
42. When the branch hit you, were you on the ladder or below? (Circle the appropriate response.)
 - a. On the ladder.
 - b. Below on the ground.
43. How did it happen when the branch hit you in the eye?
 - a. Did the branch hit you directly in the eye while you were picking?
 - b. Did the branch hit you while you were working with the ladder?
44. Did you bleed or bruise?
45. How many days did it last?
46. Was it painful?
47. How many times did it happen to you that a branch hit you in the eye?
48. How many times did you inform your crew leader about this? What did he do when you told him?
49. Have you visited a clinic or doctor some time for this type of injury? (Circle the appropriate response.)
 - a. Yes.
 - b. No.
50. If no, why? (Circle the appropriate response.)
 - a. The supervisor did not want to take me.
 - b. I did not think it was serious.
 - c. I did not have money to go alone.
 - d. I was worried about my documents.
51. If yes, how did they treat you at the doctor's office?
 - a. How much did it cost?
 - b. How long did it take?
52. Have you bought eye drops to treat yourself for branch injuries to the eye?

Other Eye Problems

53. Is there any other type of eye injury you have suffered? (Circle the appropriate response.)
 - a. Infections.
 - b. Insect bites.
 - c. Pterygium (*carnosidad*).
 - d. Loss of vision due to cataracts or glaucoma.
 - e. Red eyes, pain in the night.
54. Have you visited a clinic or doctor to look for treatments for this type of injury or illness? (Circle the appropriate response.)
 - a. Yes.
 - b. No. (Why not? Circle the appropriate response.)
 - i. The supervisor did not want to take me.
 - ii. I did not think it was serious.
 - iii. I did not have money to go alone.
 - iv. I was worried about my documents.

Appendix continues

55. If yes, how did they treat you at the doctor's office?
 - a. How much did it cost?
 - b. How long did it take?
56. Have you bought eye drops to cure another type of eye injury or illness (such as infections, pterygium carnosidad), or vision loss?
57. Have you gone to the clinic for any other type of injury?

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Demographic Questions

58. How old are you?
59. How many seasons have you worked in the citrus industry?
60. Are you married?
61. How many years did you go to school?
62. Where are you from? (Which state, e.g., Vera Cruz.)