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ORIGINAL RESEARCH

Barriers and Facilitators for Promotoras' Success in Delivering Pesticide Safety Education to Latino Farmworker Families: La Familia Sana

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ABSTRACT. Despite widespread use of lay health advisor (LHA) programs, factors related to success of LHAs remain largely unexamined. This study describes experiences and personal transformations of LHAs (*promotoras de salud*) in a pesticide safety education program targeting farmworker families in North Carolina, using postintervention in-depth interviews conducted with 17 LHAs. LHAs identified assets and barriers that affected their success. LHAs also described increases in self-efficacy and empowerment resulting in perceived improvements in ability to teach and impact their community. Such positive changes are essential benefits to the LHAs. Evaluations that address these topics are needed to better understand continuity and attrition in LHA programs.

KEYWORDS. Farmworker families, pesticide education, promotoras de salud, public health

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INTRODUCTION

The use of lay health advisors (LHAs) is a recommended approach to reducing health disparities in vulnerable, minority populations such as Latino migrant and seasonal farmworkers.[1–4] LHAs are nonprofessionals, trained as natural helpers to serve as a bridge connecting the health services to populations with specific needs or barriers to care. They provide culturally appropriate information and education to populations who traditionally lack access to care.[5,6] LHAs are respected members of their community who understand community needs and share the culture, language, and personal experiences of the people they serve. They use formal and informal teaching strategies to disseminate health information, increase awareness, and empower people to change.

Community-based education through LHAs, or *promotoras de salud* (promotoras), is important with Spanish-speaking Latino farmworkers and their families, because they often lack access to the US health care system and are far removed from traditional educational efforts within mainstream US society.[7] Promotoras have been used successfully to promote lifestyle behavior changes and cancer screenings,[8–11] increase pesticide knowledge and ways to reduce pesticide exposure among farmworker families,[4,12,13] improve eye safety among farmworkers,[14] improve the occupational health of Latino manufacturing workers,[15,16] and improve other general health practices among Latino populations.[17,18]

Emerging literature has focused on the effectiveness of LHA programs in terms of outcome evaluation.[19] This includes both informal part-time LHA programs and the more recent credentialed community health worker programs that some states have implemented. Evaluation literature has not identified factors influencing whether LHAs succeed as community educators, information that is important to design successful LHA programs and prevent LHA attrition. Few evaluations have examined the impact participation in these programs has on LHAs.[2] It is reasonable to expect that the success of LHAs will derive in part from their improved self-efficacy and empowerment. Self-efficacy is one's belief in the ability to succeed in achieving or accomplishing goals.[20] These beliefs may become more developed and generalized as one acquires new skills, understanding of the situation, and mastery of experiences, and receives positive appraisals and motivation.[21,22] Empowerment is the power of individuals to gain understanding and assert control over their own decisions and lives[23] and having the knowledge of what choices can be made in particular situations.[24] Empowerment is frequently achieved by acquiring domain-specific self-efficacy and self-confidence, learning about available resources, developing skills, and engaging in behaviors to exercise control over situations.[25]

Based on La Familia Sana project, a promotora-based residential pesticide safety education program for migrant and seasonal farmworker families, this analysis has two objectives. First, it delineates the characteristics that promotoras reported as being important to their success. Second, it describes promotoras' appraisals of how participating in the program affected their personal and professional lives in terms of self-efficacy and empowerment.

Context

Latino farmworkers and their families in the United States constitute an underserved and vulnerable population.[26–28] The majority (78%) of US farmworkers are foreign-born, non-English speakers from Mexico and Central American countries. About one third live in poverty, and few use social service programs, despite eligibility.[29] Due to the nature of their work, many agricultural Latino farmworker families live in isolated rural communities where they lack access to appropriate health care.[26]

Pesticide exposure is a health risk to farmworkers and their families.[30–32] Farmworkers experience direct pesticide exposure at work.[33–35] Members of farmworker families are exposed to agricultural pesticides through several paraoccupational routes, including pesticides taken home on worker clothes and pesticide drift.[32,36,37] Farmworkers, who generally live in poor-quality housing, are also exposed to residential pesticides used to control pests.[38–42]

Pesticide exposures over long periods, even at low levels, have health consequences for farmworker families. Results from the Agricultural Health Study, a large (over 85,000) cohort study of private and commercial licensed pesticide applicators and their spouses, show that long-term, low-level pesticide exposure results in increased risks for respiratory disease,[43] neurological disorders,[44] and cancer.[45] Longitudinal data on children living in a farmworker community show that prenatal exposure to organophosphorous insecticides is associated with lower IQ.[46]

The US Environmental Protection Agency (US EPA) Worker Protection Standard (WPS)[47] is the current federal regulation addressing farmworker pesticide safety. It mandates that agricultural workers be provided basic education to help reduce occupational exposure. This training is often limited, and provision of information on workplace factors that lead to family exposure is not required.[31] WPS does not require pesticide safety training or information about pesticide safety be provided to the members of farmworker families. The geographically dispersed farmworker population, limited English language skills, and low levels of educational attainment in the farmworker community make providing farmworker families with needed pesticide safety information challenging.

La Familia Sana is a promotora-delivered program[48] focused on pesticide safety that has demonstrated efficacy[4] and effectiveness.[13] It was developed, implemented, and evaluated by Wake Forest School of Medicine as part of a long-term, community-based participatory research program. As part of a demonstration project, six eastern North Carolina public health agencies implemented La Familia Sana. These community partners identified women from the Latino farmworker community to serve as promotoras. Each agency identified a staff member to be a liaison between the promotoras and the program. Promotoras were trained to deliver a six-lesson, culturally appropriate curriculum on pesticide safety in the participants' homes.[48] Follow-up training was given as lessons progressed. Training focused on (1) characteristics of an effective promotora; (2) teaching methods; and (3) mastery of the intervention program. Promotoras were expected to identify and recruit farmworker families from their communities who self-identified as Latino, had a child less than 12 years, and had a member of the family who had done farm work in the past year. They then scheduled and delivered the six lessons in five or six sessions that lasted 30 to 60 minutes each. Sessions typically took place in the participants' homes. Promotoras received a small stipend for attending trainings and for each lesson delivered. An evaluation of La Familia Sana program found that it was successful in increasing knowledge among women in farmworker families across six different pesticide safety domains and changes in behavior among these families.[13] The demonstration project implemented La Familia Sana program over an 18-month period from April 2009 through September 2010.

Design

Promotoras

Community partners initially identified 12 women from the Latino community to serve as promotoras at the start of the program. Seven of the original promotoras remained in the program for the 18 months. Seven original promotoras dropped out before the program ended, with an average of 7.4 months as a promotora. Five more promotoras were identified while the program was in progress, and they stayed in the program from 5 to 13 months.

All of the 17 promotoras were female. Most were in their 30s (Table 1). Fifteen were born outside the United States, with 13 born in Mexico. All spoke Spanish, but Mixteco was the primary language for two, and English was the primary language for one. Eleven had at least a high school education. Ten had experience doing farm work, and nine had experience in outreach for public health or other programs.

Evaluation Data

Semistructured, in-depth interviews were conducted with all 17 promotoras following completion of La Familia Sana intervention program. Questions in the interview focused on

TABLE 1. Lay Health Promoter (LHA) Personal Characteristics, La Familia Sana Project

Personal characteristics	Number
Age	
Less than 30 years	3
31 to 40 years	10
More than 40 years	4
Country of birth	
Mexico	13
Honduras	1
Colombia	1
United States	2
Primary language spoken	
Spanish	16
Mixteco	2
English	1
Education	
Less than high school	6
High school/GED	9
More than high school	2
Marital status	
Married	16
Not married, divorced, separated	1
Work experience as farmworker	10
Work experience as an outreach worker	9

personal experiences as a promotora; circumstances that facilitated their job; challenges or obstacles that made being a promotora difficult; promotoras' relationships and interactions with participants, their community, and sponsoring agency; personal impact of being a promotora, including self-efficacy and empowerment; views on program procedures, such as training and participant recruitment; loyalty to the program; skills gained; and future plans and goals. Promotoras that did not complete the program were also asked reasons for leaving.

All data collection activities were approved by the Wake Forest School of Medicine Institutional Review Board. Promotoras were given information about the study and asked to sign a consent form. Interviews were conducted between September and December 2010 by a bilingual research staff member fluent in Spanish.

Analyses

Interviews were transcribed verbatim and translated into English to make them accessible to all team members, including those not fluent in Spanish. Transcripts were coded using a coding dictionary based on concepts from the interview guide by a team member and reviewed two more times by other team members to ensure accuracy and completeness. Fourteen main themes emerged from the interviews. Codes were then categorized using ATLAS.ti.6.1, a software program for text analysis. ATLAS.ti was used to identify relationships between codes in analysis. Categories and relationships were then used to answer two questions that were the target of the evaluation. What did promotoras consider to be characteristics that were important to their success? How did promotoras change personally as a result of their job?

RESULTS

Successful Program Implementation

Promotoras identified six factors that were assets or barriers to their successful implementation of La Familia Sana program. These factors were teaching experience, program flexibility, personal connections, support, and perceived personal benefit.

Teaching Experience

Having prior experience in education facilitated promotora success. This included previously teaching farmworkers about health-related topics or conducting outreach with farmworkers for another agency. Eight promotoras had previous outreach work experience or had taught on similar subjects or settings. One had prior promotora experience teaching farmworkers. Prior teaching experience working with farmworkers helped them identify potential participants in their existing network of people.

> *For me, this job [as promotora] was easier because I have been visiting the workers for some time now. My job [outreach worker] also includes talks about pesticides and sexually transmitted disease, so it was easier for me to talk to the families.* (Promotora 1)

Not having teaching experience was considered a barrier. Those without experience reported lacking confidence to approach potential participants, as well as lacking knowledge and techniques on teaching adults.

> *There were some promotoras who have been doing this for many years, but I wasn't the same . . . . I didn't know as much as they know . . . . They know the lessons up and down . . . . I needed more support*. (Promotora 5)

Program Flexibility

Flexible and convenient scheduling of lessons was seen as an asset because promotoras could teach around their personal and work schedules and felt that the job did not interfere with their lives. Promotoras noted that not having another job while being a promotora or having a flexible job that accommodated their promotora responsibilities was an asset. Promotoras who were also employed as outreach workers were able to integrate the program into their job hours as well as personal time. One promotora who had an unrelated job saw the program as flexible because she could teach during her free time.

> *It was accommodating because you could talk to the participants and fit the times in, and so I don't feel that it took much . . . . It was flexible because you could choose during the week or the weekends and fit it in the morning, night, or evening. The schedules were flexible*. (Promotora 1)
>
> *I did have to work during the weekends at a Mexican store . . . . I did [the lessons] during the weekdays. And, most of [the participants] were flexible as well*. (Promotora 2)

Some promotoras mentioned that scheduling lessons with participants was difficult because farmworker families have tight schedules.

> *Sometimes they would tell me to go at a certain hour, but they wouldn't be there because they were still working. Sometimes I would have to go various times until I found them. That was an obstacle, but most of the time I would try [to] make another appointment and go again*. (Promotora 8)

On the other hand, five promotoras working in a job not associated with a partner agency or a job unrelated to working as an outreach worker categorized employment as a barrier and a motive for quitting the program. They could not devote sufficient time to the program because they had competing obligations from their other jobs.

> *. . . I have a lot of work here [at current job] so I couldn't continue [with the program] because we do a lot here*. (Promotora 11)

Personal Connections

Having personal connections to the people and knowing the area where the participants lived were considered assets, making it easier to reach out to the community. Promotoras liked being able to gain participants' trust and felt comfortable teaching other Latino women. They also expressed enjoyment in working with people or teaching.

> *I have worked in the area all my life, and all around the small towns with farmers and all. I know the various camps and where houses are and sometimes people live there, families and all. But apart from my farm work, what helped the most was the people here know families and know where the camps are. So it was easier for me [to recruit*]. (Promotora 14)
>
> *I liked working with people . . . . I liked teaching all that to the people*. (Promotora 7)

Promotoras valued teaching participants who spoke their own language (Spanish or Mixteco) and shared their culture. Teaching was harder when participants did not speak the same language.

> *They would ask me to explain, so I would [in Mixteco]. Of course, it would take more time, but my intention was for them to understand what was in the [Spanish] video, so I would work with them. It was a very good experience for me*. (Promotora 12)
>
> *[The participant] doesn't speak Spanish or English but speaks a dialect [indigenous language] so she struggled to understand. I was told I would have to be very patient because she doesn't understand well and she can't really express herself. It was very difficult with her*. (Promotora 15)

Farmworkers often lived in dispersed rural communities. Promotoras found it difficult to reach out to and teach participants who lived far away, but still in their own communities.

> *[The trip] is about an hour and a half. In reality it is very hard to do those that live way out there because of the distance and time*. (Promotora 16)

Support

Promotoras who received support from their family, employers, and coworkers felt that this aided them in being promotoras. Having support from study staff members was an asset, as they could rely on them if they had questions about the material, teaching, or unrelated matters such as finding resources for families.

> *Family support is very important because if you want to do something but your partner or children stop you, then it's like you don't have enough strength. They were always there with me till the end*. (Promotora 12)
>
> *She [the trainer] came three times to see how I was teaching; and I felt I had more confidence because, if I messed up, she could help me.* (Promotora 7)

Promotoras who dropped from the program mentioned lack of support from one or more sources. Lack of support from family hindered the ability to take time to teach. Three promotoras that left the program mentioned lack of support from the partner agency.

> *Now that I have the baby I can't leave her with [my husband] because he says that he is stressed out, and so I can't*. (Promotora 5)
>
> *Near the end was when I found out that the agency could have helped us. If I had known, I would have asked for families to [enroll]*. (Promotora 6)

Perceived Personal Benefit

All promotoras expressed satisfaction in learning and gaining the pesticides information because they could use their knowledge with their own families and homes. Learning through teaching motivated them and benefited their families and the program.

> *I worked in the field a long time, but also you learn a lot of new things . . . . Not only the participants but also the promotoras learn. And by having more knowledge one gives it more importance, we have more conscience, and know where to put things, how to use things and that's essential for my family and I and to those whom I taught.* (Promotora 14)
>
> *This did change me in the aspect that I learned a lot of things, things that one doesn't know about the fields. But this experience did help me a lot here in my house.* (Promotora 7)

Self-Efficacy and Empowerment

All promotoras reported positive personal changes and self-satisfaction as a result of their participation in the program. Many described a perceived enhancement in their ability to positively influence participants and their community. Their comments indicated changes in both self-efficacy and empowerment. Being a promotora created positive changes in self-efficacy that lead to positive changes in empowerment. The promotoras believed that the program created personal changes in their beliefs by improving or providing new skills or

having experiences that allowed them to understand and master situations.

Self-Efficacy

Respondents without teaching or outreach experience indicated that being a promotora helped them cultivate new skills, as they realized that they had the capability to teach and help their communities. Those who already had teaching or outreach work skills said that the program helped them teach better either by helping with a new sense of organization, with *"different tactics to teach different people, depending on each person"* (Promotora 06), or by knowing how to treat participants.

> *I learned that I have the capacity to teach and help people learn. I learned that the way I treat people is the way people are going to treat me. I learned that I have to go the homes and not say that I come to teach you. I have to say, "We are going to learn." It is about not making the people feel that I am more than them because I am the one teaching.* (Promotora 1)

The program helped them learn how to open up to people, to be friendlier, to be humble, and to make eye contact, which helped them carry out their duties.

> *I feel that I became more social. I would talk before; but now that I had people to visit, I feel that I became friendlier*. (Promotora 5)
>
> *Don't criticize or judge, but instead, go in there to teach and learn together.*
>
> *That's what I learned from myself that we have to be humble and be in her side and in her shoes so she feels comfortable.* (Promotora 1)
>
> *It also helped me to be able to make eye contact with people because you have to talk to people looking at them, but without an intimidating look, so they know that you are interested*. (Promotora 16)

Promotoras reported that the program improved their comfort in reaching out to participants, feeling more secure about what they were presenting, and losing fear in teaching and talking to people.

> *At first I stuttered and shook a little, but with more practice and more frequent visits it was all much easier*. (Promotora 12)
>
> *At first I would be scared and I would wonder if I was going to do it right, but after talking it would go away . . . . You gain confidence*. (Promotora 4)

Promotoras felt motivated to teach, which affected their self-efficacy, and felt driven to try harder in order to succeed in their teaching.

> *I had a very, very big personal change and that's why I am very thankful for the program and for [the trainer's] encouragement because she was always motivating me and for [the trainer] because every time you would do a promotora meeting we would get motivation and energy*. (Promotora 12)
>
> *I would ask her [the trainer] and she would say that I was doing fine and that I had to be confident in what I was doing*. (Promotora 2)

Empowerment

Promotoras reported an increased understanding that they had the skills and resources required to teach. Their comments included: "*I learned that I'm useful to others*" (Promotora 7), "*They trust you and you feel better*" (Promotora 14), "*If I try hard I know I can do it*" (Promotora 11), and "*I felt busy and useful because I was really helping people*" (Promotora 7).

Promotoras with and without teaching experience reported an increase in self-confidence. They felt more comfortable and confident about themselves, as well as able to learn new materials.

> *Doing this job with families, now I feel even more confident because I know I can talk to families and I can give more to families. I can do more for the families in the community*. (Promotora 1)

As you go more and more to their house, you gain more confidence in speaking, about what you are teaching, and also because you see them listening to you in the way that they would want others to listen to them. (Promotora 11)

Before I would feel timid but now I feel more confident to be able to talk to them, so it helped me a lot. (Promotora 3)

Promotoras reported development of skills such as self-trust, independence, communication within their families, and problem solving. They also developed procedures to deal with problems or obstacles to teaching. These changes empowered women to teach, as it increased their participatory behaviors.

It helped me a lot because now I feel more confident . . . . Now I can even drive. I feel it made me more independent. I think it helped me open up. (Promotora 15)

I would tell participants that they need to separate their work clothes and I made a sign by cutting some cardboard and stuck it to a little basket and I would put my daughter doll's clothes . . . . This is easier because there are many people who can't read or write, and they get it more by having a visual than by reading it. (Promotora 9)

Sometimes I would take things for the children, and they would be on one side being entertained and I was with the mothers. (Promotora 13)

The promotoras felt more empowered through their experience, as they were better able to help families, not just teaching about pesticide lessons, but with other unrelated issues. Being able to grasp and teach the program helped them gain self-esteem.

Personally, one gains more self-esteem when one is able to explain [the information] to people . . . . (Promotora 3)

I grew because I also felt important when I would arrive to give a lesson and doing the evaluations. I felt motivated and when I started as a promotora, I had to get to know more people and a lot of families and so I had to take a step . . . . I think my self-esteem was low and this opportunity increased my self-esteem. That's how I improved with every lesson and every family visit, and I would improve every day. (Promotora 13)

DISCUSSION

This study describes experiences of promotoras in the La Familia Sana program, a promotora-led residential pesticide safety educational program for farmworkers in eastern North Carolina. Despite the growing use of LHAs as an approach to lowering health disparities and health prevention and promotion,[49] there is a gap in the existing literature on the personal and developmental changes that occur within the LHAs who take part in such programs. This research helps to fill this gap. The information also contributes to current knowledge on attrition factors and the design of successful LHA programs. Attrition in LHA programs is a significant problem, because evidence suggests that lack of LHA continuity can undermine behavioral outcomes of the intervention.[50] Further, an LHA who drops out can sever ties between a program and community members and erode their trust in the program.

Promotoras identified assets and barriers that affected their ability to perform. They indicated that having teaching experience in a related field; not having a job or having one that accommodated their promotora work; having personal connections within the community, support, and program flexibility; and perceiving personal benefits influenced their effectiveness and helped them perform their job in their community. The findings suggest that the La Familia Sana program can be successfully integrated into existing promotora or outreach programs. On the other hand, having a job that did not accommodate their promotora activities; pressing obligations with a job or family; lack of support from family or staff members; and farmworkers' locations, tight schedules, and

lack of time to receive the program lessons were seen as barriers to teaching the lessons. The combinations of these factors were the most salient at discouraging La Familia Sana's promotoras to continue with the program, a result congruent with research in attrition rates among LHAs elsewhere.[51]

This study also shows that taking part in a lay health promotion program changed the promotoras' self-efficacy to teach and impact their community. Promotoras' self-efficacy increased as they improved existing skills or gained new ones. Those with no teaching experience realized that they were capable of teaching and helping their community. Those with teaching experience learned new approaches to improve their teaching, including making eye contact and becoming friendlier. Their beliefs of their ability to teach were also changed by having mastery of the program. Teaching became easier, and they felt secure reaching out to participants. Greater self-confidence and security likely enhances their effectiveness in delivering program materials, and evidence suggests that participants' greater perceptions of promotora effectiveness are associated with greater behavior change.[50]

Positive changes in self-efficacy led to positive changes in empowerment[25] because one's beliefs about capabilities in a particular context affect the initiative to take part in the behavior that will influence the outcome.[52] In addition, positive changes in empowerment were also influenced by an increase in self-confidence and self-esteem because they felt better about themselves. The promotoras also developed nonteaching skills that enabled them to teach. They reported increased independence and self-trust, improved communication with others, and skills development such as problem solving. Other studies have also shown that working as an LHA increases self-efficacy and empowerment. Previous quantitative research with LHAs has shown a similar empowerment of LHAs.[2] For example, male LHAs working in a human immunodeficiency virus (HIV) and sexually transmitted disease (STD) research program developed an increased confidence in approaching strangers and disseminating health promotion materials as well as increased skills in HIV and STD prevention and care.[53]

These factors should be taken into consideration when designing LHA programs to keep lay health advisors' attrition rates low and participation rates high.[51] When screening LHA candidates, programs should aim to recruit individuals who are members of the target community, have community connections, and have previous experience or high motivation to learn. Agencies should stress the time commitment and the extent of the program flexibility, and communicate that having support from family allows LHAs to perform better and stay in the program. To increase family support, LHA programs could involve family or spouses in training or social activities to emphasize and recognize the value and importance of being an LHA.

In addition, open communication and a comprehensive support system within the program are imperative to maintaining success and reducing failure when LHAs are faced with difficult tasks or obstacles when performing their jobs. Sufficient training and supervised work need to be provided to increase efficacy and teaching abilities. Persuading LHAs of their abilities to perform their tasks and reach their goals may lead to development of a new sense of self-efficacy and new skills that may help them succeed in the program.[24] Programs need to share ownership of success and decision-making to motivate and empower LHAs to develop strategies and skills to improve their outreach.[25] As a result of participation in successful LHA programs, LHAs are able to reach out effectively to the target populations and deliver information or services. These LHAs then become natural leaders in their communities and improve health in vulnerable communities.

This analysis has limitations. The changes that occurred with the promotoras during the time of La Familia Sana program may also be attributed to other life experiences or influences that were not captured in the interviews. In addition, the qualitative nature of the evaluation prevents connecting the positive changes reported by the promotoras to specific aspects of the program. The strength of this study is the relatively large number of promotoras who participated,

providing a variety of backgrounds and experiences. Another strength is the inclusion of all participating promotoras, including those who left the program before its completion.

CONCLUSIONS

LHA programs can provide direct benefits to individuals participating as LHAs, as well as to the program recipients. Such benefits, including increased self-efficacy and empowerment, can help LHAs become community leaders and successful educators and health promoters. In addition, the changes in the LHAs can affect the programs they serve and their communities, as it gives them the power to improve human capital in vulnerable communities, gain experience, and increase their ability to attain better jobs in the future. Identifying factors that discourage LHAs from continuing in programs can help to prevent LHA attrition.

Data about the impact of LHA programs remain largely unexamined, especially within the Hispanic/Latino LHA programs. Program evaluation that addresses these topics is needed to learn more about the impact and the long-term effects of programs on the LHAs.

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