

Training & Capacity Building

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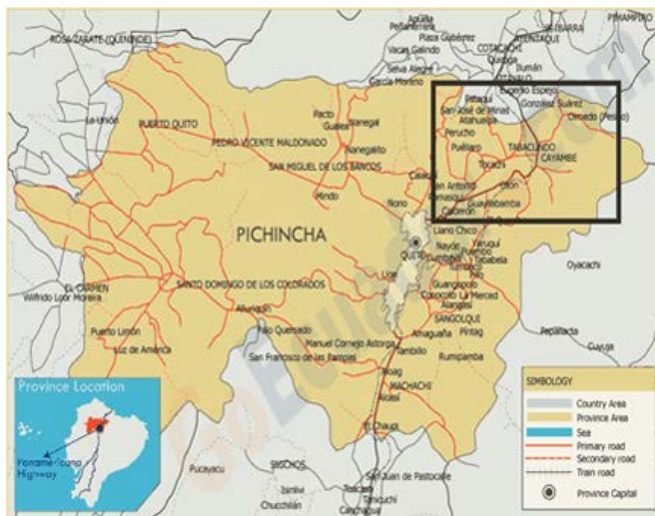
Voices from the Field: Community Based Pesticide Exposure Research in Ecuador's Flower Industry

By Megan Avakian

This month, we spoke with Alexis J. Handal, Ph.D., of the University of New Mexico, about building sustainable partnerships and overcoming challenges in the field while conducting community-based research. For more than 10 years, Handal has worked with collaborators and communities in Ecuador to understand the social, economic, political, and health impacts of the cut-flower industry on communities in the region.

In Ecuador, cut flowers are the third most valuable export behind oil and bananas. The heavy use of pesticides in the industry may expose flower workers, the majority of whom are young women of reproductive age, to harmful chemicals. These workers are also exposed to stressful working conditions and long hours, and often carry the additional burden of domestic responsibilities. [Alexis J. Handal, Ph.D.](#), of the University of New Mexico, wants to understand how the cut-flower industry may affect maternal health and neurodevelopment in infants and young children.

She began her community-based research under the EcoSalud Project in Ecuador more than a decade ago while working on her doctoral dissertation. The EcoSalud Project, a collaboration between Centro de Estudios y Asesoría en Salud (CEAS) and the International Development Research Center, was launched in 2001 after community leaders from the Cayambe-Pedro Moncayo region of Ecuador raised concerns about potential health problems among flower workers and



Map of the Cayambe-Pedro Moncayo region of Ecuador where the study was conducted (above). Photo of industrial cut-flower greenhouses (below).

(Photo courtesy of Alexis J. Handal)

local residents. The project aimed to understand the social, cultural, and health impacts of the cut-flower industry in the affected communities.

In 2003, Handal conducted the epidemiologic component of the EcoSalud Project that focused on children. She compared neurobehavioral development in Ecuadorian children from communities with high potential for pesticide exposure from the cut-flower industry to that of children living in a community with low potential for exposure. She found that children living in high-exposure communities had poorer neurodevelopment compared to children from low-exposure communities. In addition, children under 24 months of age whose mothers reported working in the flower industry during pregnancy scored significantly lower on neurodevelopmental tests.

Building off of these results, and partnering with colleagues at the Universidad San Francisco de Quito (USFQ), a grant from NIEHS in 2010 enabled Handal to conduct a pilot project following mother-infant pairs to assess the relationship between prenatal maternal pesticide exposure and neurobehavioral development in infants at four months — the first effort to characterize prenatal pesticide exposure levels in Ecuadorian working women. In that study, she also tested the feasibility of conducting a longitudinal study in the region as well as the feasibility and acceptability of pesticide collection methods and neurodevelopmental assessment tools.

Currently, Handal is developing a longitudinal pregnancy cohort study with her colleague, Fadya Orozco, M.D., Ph.D., at USFQ, which will further the work she has conducted with her partners in the region.

A Community-Based Approach

“When conducting research where you are inserting yourself into the lives of people in a very intimate way, it is absolutely critical to use a community-based research approach,” said Handal. She explained that community-based approaches engage partners as an integral part of the research process, from beginning to end. “I think community-based research is not only the most ethical and respectful approach, but it’s also the most sustainable approach because you gain the trust of communities and in-country groups, which promotes long-lasting and successful partnerships.”

Initially partnering with CEAS and the EcoSalud Project helped Handal establish critical connections on which she continues to rely to conduct her research. One such connection was to a regional network of childcare centers formerly run by a local nongovernmental organization, Fundación Casa Campesina Cayambe (FCCC). She recruited many of the women and children for her first study through these centers, which were known and trusted among community members. She continues to work with these and other daycare centers, which are now collectively run by the Ecuadorian government.

Through her work with these centers, Handal developed an invaluable partnership with Luis Peña, a well-known and respected community leader who served as director of the network of childcare centers. Currently a professor at the Universidad Politecnica Salesiana-Cayambe (UPS-Cayambe), Peña remains a strong research collaborator for Handal.

Handal's early work with CEAS also connected her with Doris Sanchez, who, through her own research, has strong relationships with community leaders and groups in the study region. Sanchez now works with Handal as a community liaison consultant and helps develop and lead community meetings, presentations, and workshops. She has also played a major role in study promotion, recruitment, and follow-up.

During the course of the 2010 project, Handal also met Katty Túquerres, who later became the study nurse, and Maritza Páez, who became the project manager. "Katty and Maritza were key to the success of the project," she explained, "They followed the women enrolled in the study through pregnancy, were there with them during delivery, and were their social support system in a region where women are often mistreated during the labor and delivery process." During exit interviews, many women enrolled in the study reported that they want to work as recruiters for future projects because of the attention and support they received from the study team.



Study nurse Katty Túquerres conducts a post-delivery visit with a study participant.
(Photo courtesy of Alexis J. Handal)

"When conducting research in another country, partnering with in-country groups or researchers that have established connections in the community is important," said Handal. "But it's critical to partner with groups that share your research interests for the sustainability of your efforts."

Advice from the Field

Offering advice for U.S.-based researchers interested in conducting environmental health research internationally, Handal noted that inclusion of a Community Advisory Board was critical to the success of her efforts and recommended this as an approach to engage with local communities. She also discussed the need to be flexible. "Sometimes collaborations fall through or the people you have partnered with change positions or institutions," she explained. "When these types of unexpected events happen, you have to be creative, flexible, and willing to adjust to figure out a new approach and continue moving forward."

Handal also noted that lack of continuous funding poses a challenge when it comes to maintaining strong in-country collaborations. “U.S. researchers need to think about how they will stay connected to their partnering communities and collaborators when funding is limited and they are not on the ground actively collecting data,” she said. When her funding ran out, she stayed connected by securing small grants to coordinate free workshops on topics suggested by the community members. Although workshops on labor rights, self-esteem, and domestic violence did not directly relate to her pesticide research, they did focus on other important social and cultural impacts the industry has had on the region and also let community partners know that she and her team remained engaged with the community. She has also developed and conducted training workshops for health promoters and childcare center workers, including workshops on infant stress, child development, and infant first aid.



Attendees at a community-wide workshop on infant stress and development co-led by Drs. Alexis Handal and Jean Lowe. Coordinating these workshops is one way Handal stays connected to communities when funding is scarce. (Photo courtesy of Alexis J. Handal)

Building Research Capacity

Parallel to her epidemiological investigations, Handal hopes to incorporate a research capacity building component into her efforts. In developing countries such as Ecuador, personnel trained in developmental assessment are limited. There is also little local laboratory expertise in evaluating pesticide exposure. To bridge this gap, Handal has applied for funding to organize training workshops with community partners and professionals on issues around child developmental assessment and pesticide exposure monitoring. She also hopes to open dialogue between the U.S. research team and Ecuadorian colleagues and community partners about study concepts and methodology, and how the bi-national team can work towards building research capacity in Ecuador. She plans to work with her colleagues at USFQ and UPS-Cayambe to include students in the capacity building efforts as well. “It will be important to include students from the region in this training and capacity building process so that the next wave of public health workers are aware of these important health issues and have the knowledge and resources to address them.”