



FARMWORKER JUSTICE EYEOPENER

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Welcome to Farmworker Justice's electronic newsletter, the EyeOpener, covering recent developments in policy and research relevant to migrant farmworkers in the US. Please feel free to send comments, questions, or suggestions for future issues to the address provided at the end of the newsletter.

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1. Migrant Farmworkers Have Significant Health Care Needs But Face Numerous Barriers to Obtaining Services

Arcury TA, Quandt SA. Delivery of Health Services to Migrant and Seasonal Farmworkers. *Annual Review of Public Health* 28:345-363, 2007.

Migrant and seasonal farmworkers suffer from an array of health problems, but often find it difficult to obtain needed health care. A forthcoming review provides an in-depth look at farmworkers in the United States, including an overview of the population, their health care needs, the challenges they face and the state of the research in farmworker health services.

Agricultural hazards put farmworkers at risk for a variety of work-related injuries and illnesses. They include: traumatic injuries, such as cuts or eye damage from working with sharp instruments; repetitive motion injuries; acute and chronic pesticide-related illness and skin cancer caused by sun exposure.

Access to care is complicated by numerous factors. Most farmworkers do not have insurance, are poorly paid, and lack transportation. Thus, obtaining care is often difficult. Undocumented workers may avoid interactions with institutions, including clinics, they fear might report them to the authorities. Cultural and linguistic differences between workers and health care providers increase the likelihood of miscommunication and may lead to conflicting ideas about the illness and how to treat it. Worker mobility makes continuity of care challenging. These and other barriers cause farmworkers, and their families, to skip routine and needed care, leading to higher rates of infectious and chronic diseases, as well as oral health and mental health problems.

Six national organizations are collaborating on ways to overcome these barriers and are providing assistance to migrant health centers and health care providers to build capacity for working with farmworkers. The following organizations are available to provide a wide range of training and technical assistance:

- *Farmworker Health Services, Inc.*, supports outreach worker programs for migrant and community health centers by providing products, services, and activities that enable them to understand and effectively address farmworker health issues.
- *Farmworker Justice* provides technical assistance on occupational and environmental health issues including pesticide illness, workers compensation and preparing for a possible avian flu pandemic. It also works on advocacy and education concerning wages and working conditions, immigration matters, chronic diseases, e.g. AIDS, and leadership development.
- *The Migrant Clinicians Network* works to strengthen the infrastructure for health care facilities serving farmworkers by offering support for providing a wide range of health care services.
- *Migrant Health Promotion* develops promotores de salud programs and other targeted health education efforts for health centers and community-based organizations; it also provides community capacity building.
- *The National Center for Farmworker Health, Inc.*, focuses on migrant health leadership development and offers training programs in health center governance, health center management, and migrant health orientation and training.
- *The National Association of Community Health Centers, Inc.*, serves as an informational resource for community-based health centers by providing education, training, technical assistance, and leadership development on a wide variety of matters including financial management.

The efforts of these organizations to increase health center capacity could be the subject of research that evaluates their role and effectiveness in improving the availability and accessibility of needed health care services. Research on how services are perceived and evaluated by the farmworker community is

would be helpful in providing direction for the development of future programs.

2. Suggested Approaches for Studying Linkages between Pesticide Exposure and Chronic Health Effects in Farmworkers

McCauley LA, Anger KW, Keifer M, Langley R, Robson MG, Rohlman D. Studying Health Outcomes in Farmworker Populations Exposed to Pesticides. *Environmental Health Perspectives* 114(6):953-960, 2006.

Many studies have shown associations between pesticide exposures and chronic health effects. Strong evidence supports the link to certain cancers, such as non-Hodgkin's lymphoma, leukemia, multiple myeloma and prostate cancer (Alavanja et al. 2004; Daniels et al. 1997); neurological problems, such as memory loss, attention deficits and cognitive dysfunction (Rohlman et al. 2001); and birth defects, especially orofacial clefts and musculoskeletal disorders (Hanke & Jurewicz 2004). Yet significant challenges remain in studying the long-term health effects of pesticide exposure in farmworkers. To advance this research, McCauley and colleagues present a brief overview of the existing literature, identify research challenges in studying farmworkers and suggest helpful approaches and methods for tackling these issues.

Using an epidemiological lens, “[t]he basic components that are necessary to effectively study the association between pesticide exposure and health effects are determination of the population at risk; a valid determination of exposure; verification of diagnosis, symptom, or biological marker of a health effect among the populations being studied; methods to link individual exposure to health effects; and the ability to establish a temporal relationship between the exposure and the health effect” (McCauley et al. 2006: 954). But many of these basic data are unavailable for the farmworker population (e.g., number of farmworkers, names of products and amounts of pesticides to which they are exposed, number of acute poisoning cases, complete health records for workers). Consequently, the methods and approaches for collecting data need to be customized to fit the farmworkers’ needs.

One promising approach for exploring the association between exposure to neurotoxic pesticides, such as organophosphates (OPs), which are widely used in agriculture, and adverse neurological effects is to look at performance on a battery of neurobehavioral tests. Typically, this would involve a cross-sectional study design that tests exposed individuals at one point in time and compares their performance with that of a control group of individuals with no known exposure. Exposed individuals would be matched with controls based on demographic characteristics such as age, gender, education, and cultural background or ethnicity (Anger et al. 1997). Studies using this technique have shown remarkably consistent results, across countries and exposures. When inconsistencies have occurred, they were likely due to lack of standardization in testing protocols and differences in definition of exposed individuals, among other factors.

New techniques are also being developed based on biomarkers, such as DNA damage and genotoxicity, that do not depend on a stable and literate population.

Clinicians can contribute to research on pesticide-related health outcomes by familiarizing themselves with the signs and symptoms of pesticide poisoning, making appropriate diagnoses and reporting suspected cases to state health authorities.

Alavanja MC, Hoppin JA, Kamel F. Health effects of chronic pesticide exposure: cancer and neurotoxicity. *Annual Review of Public Health* 25:155-197, 2004.

Anger WK, Sizemore OJ, Grossmann SJ, Glasser JA, Letz R, Bowler R. Human neurobehavioral research methods: impact of subject variables. *Environmental Research* 73(1-2):18-41, 1997.

Daniels JL, Olshan AF, Savitz DA. Pesticides and childhood cancers. *Environmental Health Perspectives* 105:1068-1077, 1997.

Hanke W, Jurewicz J. The risk of adverse reproductive and developmental disorders due to occupational pesticide exposure: an overview of current epidemiological evidence. *International Journal of Occupational Medicine and Environmental Health* 17(2):223-243, 2004.

Rohlman DS, Bailey SR, Anger WK, McCauley L. Assessment of neurobehavioral function with computerized tests in a population of Hispanic adolescents working in agriculture. *Environmental Research* 85(1):14-24, 2001.

3. Biomonitoring Provides Important Information in Efforts to Reduce or Prevent Pesticide Exposure

Barr DB, Thomas K, Curwin B, Landsittel D, Raymer J, Lu C, Donnelly KC, Acquavella J. Biomonitoring of Exposure in Farmworker Studies. *Environmental Health Perspectives* 114(6):936-942, 2006.

In order to assess and reduce farmworkers' risk of injury from pesticides, it is helpful to identify the products used in their workplaces and the doses to which workers are exposed. This can be accomplished by estimating the amount and types of pesticides that get into a worker's environment through drift, handling or post-application contact, or by estimating the amount of pesticides absorbed by the workers' bodies (i.e., the "internal dose"). Both methods have strengths and limitations. Barr and colleagues focus on biomonitoring, a means of calculating internal dose. Their article describes the best ways to incorporate the technique into studies of exposure to nonpersistent pesticides (NPPs; e.g., atrazine, diazinon) and ways to enhance the usefulness of the resulting data.

Biomonitoring involves "the measurement of a pesticide(s) its metabolite(s) or reaction product(s), in a biological media such as urine, blood, or ... tissues" (*Id. at p. 936*). The decision as to which biological medium to select depends on the scenario in which it is being collected and on the data being sought. For

example, NPPs are eliminated more quickly from the blood than from urine. If the exposure is chronic, urinary metabolite excretion rates may reach a steady state, in which case urine samples will reflect average exposure over an extended period of time. On the other hand, characteristics of blood permit testing for the parent compound (rather than a byproduct), and so can be more useful in situations where testing for a specific pesticide is desired. Saliva has also been used for biomonitoring purposes, and has the advantage of being less time-sensitive and easier to collect. The disadvantage is that saliva requires a more sensitive analytical technique because the levels of the pesticide's concentration are much lower than for blood or urine.

Interpretation of biomonitoring data relies on a number of assumptions about rates of absorption, distribution, metabolism and excretion, generally established in animal studies. Nevertheless, biomonitoring offers the best method of determining the actual dose received from all sources. As such, it can be more useful than estimating exposure by measuring the amount of pesticides in the workers' environment. Well-designed biomonitoring studies take into consideration from the beginning issues such as the means of exposure, the timing of sample collection, and proper sample handling. They also incorporate appropriate assumptions concerning the interpretation of data and provide valuable information regarding the occurrence and magnitude of exposure. The next steps in reducing or preventing exposure will include studies of specific activities and settings, including workplace and "take-home," exposure. The latter extends the risk beyond workers' health to that of members of their families, and the community at large.

4. Theatrical Presentations Can Be an Effective HIV/AIDS Educational Tool for Migrant Mexican Farmworkers

Hovey JD, Booker V, Seligman LD. Using Theatrical Presentations as a Means of Disseminating Knowledge of HIV/AIDS Risk Factors to Migrant Farmworkers: An Evaluation of the Effectiveness of the *Infórmate* Program. *Journal of Immigrant Health* 9:147-156, 2007.

Studies show that migrant farmworkers from Mexico face a higher risk for contracting HIV/AIDS than the general US population. As such, they are an appropriate target for HIV prevention programs. To effectively convey information on this sensitive issue and overcome cultural, linguistic and educational challenges, health educators and researchers developed an innovative approach using theater. Working with Migrant Health Promotion and its Teen Health Aides (THA), a program that trains adolescent farmworkers as peer educators, Michigan researchers implemented and assessed a theater program, *Infórmate*. Using a pre-test/post-test study design, researchers found that overall knowledge of HIV/AIDS transmission and prevention increased among farmworkers who attended performances on HIV/AIDS specifically geared for migrant farmworkers.

As part of a two-week training on the basics of HIV, reproductive health, and sexually transmitted diseases, the THAs learned a script written by an outside

expert on theater as health education. The teens, most of whom had never seen a live production before, also received additional training in acting and participated in a theater workshop. The final script incorporated dramatic scenes, poetry reading, and a game show to debunk myths and misconceptions, and present accurate information on HIV. Audience members completed an 18-question knowledge and attitude questionnaire both before and after they watched the presentation.

Post-test results showed significant increases in correct answers for 11 of the 18 questions, most strongly in the area of which body fluids could transmit HIV (e.g., breast milk, but not saliva). Significant improvement in knowledge was also found in modes of transmission (e.g., not from hugging or mosquito bites). General knowledge questions regarding misconceptions about how to tell if someone has HIV (e.g., they look and feel sick all the time) and attitude questions regarding fear of being around people with HIV or AIDS improved slightly. This variation in outcomes reveals that certain aspects of HIV/AIDS awareness, specifically individual perceptions, may be more resistant to change than is factual knowledge. This is an important finding that provides guidance for fine-tuning future interventions.

Despite the improvements in knowledge, at least 25% of participants still did not know the correct responses for a number of questions at post-test, indicating that gaps in knowledge remain. It is important that HIV/AIDS education continues to be provided using a variety of culturally appropriate approaches in order to increase the likelihood that the messages will be understood and accepted.

The *Farmworker Justice EyeOpener* is an electronic newsletter covering important recent developments in research and regulation on issues affecting the health and safety of migrant farmworkers. It is a joint project of Farmworker Justice and Migrant Clinicians Network, supported by the Health Resources and Services Administration's Bureau of Primary Health Care. Each issue includes summaries of recent articles and reports, as well as advice on using this information to help health professionals, outreach workers, *promotores de salud*, and advocates strengthen their efforts on behalf of farmworkers and their families.

The contents of this publication are solely the responsibility of Farmworker Justice and Migrant Clinicians Network and do not necessarily reflect the official views of the Bureau of Primary Health Care or the Health Resources and Services Administration.

Please send comments, questions or suggestions for future topics you would like to see covered to prao@nclr.org, or contact Shelley Davis or Pamela Rao, co-authors, at 202-293-5420.

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